Draft

HARDING PARK RECYCLED WATER PROJECT

Environmental Impact Report
SCH No. 2009-012004

Prepared for
The City of Daly City

July 2009

July 27, 2009

Notice of Availability

Harding Park Recycled Water Project
Draft Environmental Impact Report

Notice is hereby given that a Draft Environmental Impact Report (DEIR) for the Harding Park Recycled Water Project is available for public review. The lead agency is the City of Daly City and the responsible agency is the San Francisco Public Utilities Commission (SFPUC).

The proposed Project is part of SFPUC's Water System Improvement Program (WSIP) and would contribute to its goals of diversifying regional water supplies through the development of recycled water as an alternative water supply for non-potable uses. The proposed Project would provide recycled water from the North San Mateo County Sanitation District's recycled water facility (in Daly City) to irrigate Harding Park. Harding Park consists of the 18-hole Harding Park Golf Course and 9-hole Fleming Golf Courses (referred to jointly herein as Harding Park), under the jurisdiction of the City and County of San Francisco through its Recreation and Park Department. The proposed project consists of construction and operation of the infrastructure necessary to convey recycled water from the existing recycled water facility in Daly City to the Harding Park irrigation system, which includes construction of: a 0.8 mile recycled water pipeline, an underground storage tank, and a pump station.

Analysis of environmental impacts associated with the proposed Project identified potentially significant impacts, primarily temporary impacts resulting from construction activities, in the following areas: aesthetics; recreation; hydrology and water quality; geology and soils; land use; biological resources; air quality; noise and vibration; traffic and transportation; hazards and hazardous materials; public services and utilities; and cultural resources. Growth inducement potential, alternatives to the project, and cumulative impacts are also addressed in the Draft EIR. For environmental impacts determined to be significant or potentially significant, mitigation measures have been identified to reduce those impacts. The proposed Project site is not on any of the lists of sites that are part of Government Code Section 65962.5.

The Draft EIR, prepared pursuant to the California Environmental Quality Act, is available for public review at the following locations:

Serramonte Main Library 40 Wembley Drive Daly City, CA 94015	**San Francisco Library** Gov't Information Center 100 Larkin Street San Francisco, CA 94102	**City of Daly City website** www.dalycity.org	**SFPUC website** www.sfwater.org

PUBLIC MEETING: Daly City will be conducting a public meeting for the project on August 12, 2009 from **7:00 p.m.** to **9:00 p.m.** at Larcombe Clubhouse (at Westlake Park), 99 Lake Merced Blvd, Daly City, California, 94015.

DEADLINE: Comments must be received by at **5:00 p.m.** on **September 10, 2009**. Submit comments in writing to:

Patrick Sweetland, Director, Department of Water and Wastewater Resources
Re: Harding Park Recycled Water Project EIR
153 Lake Merced Blvd.
Daly City, CA 94105
Fax: 650-991-8220

Action on the Draft EIR is currently scheduled to be taken by the North San Mateo County Sanitation District at a regularly scheduled Board meeting in October 2009 in Daly City, California. The SFPUC will subsequently consider approval of the project.

Draft

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ACRONYMS AND ABBREVIATIONS

ABAG	Association of Bay Area Governments
ADRR	Archaeological Data Recovery Report
amsl	above mean sea level
BAAQMD	Bay Area Air Quality Management District
BAWSCA	Bay Area Water Supply and Conservation Agency (formerly BAWUA)
BMP	Best Management Practice
CALTRANS	California Department of Transportation
CAP	Clean Air Plan
CAPCOA	California Air Pollution Control Officers Association
C-APE	CEQA Area of Potential Effects
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CCSF	City and County of San Francisco
CDFG	California Department of Fish and Game
CDPH	California Department of Public Health
CE	Listed as Endangered by the State of California
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CESA	California Endangered Species Act
CFC	Chlorofluorocarbons
CH4	Methane
CMU	Concrete masonry unit
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide equivalents
CSC	California Species of Special Concern
CT	Listed as Threatened by the State of California
CUPA	Certified Unified Program Agency
dB	Decibels
dBA	A-weighted decibels
dbh	diameter at breast height
DTSC	Department of Toxic Substances Control
EIR	Environmental Impact Report
EPCRA	Emergency Planning and Community Right-to-Know Program
ERO	Environmental Review Officer
ESA	Environmental Science Associates
FCAA	Federal Clean Air Act
FCAAA	Federal Clean Air Act Amendments

FE	Listed as Endangered by the federal government
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FIP	Federal Implementation Plan
FT	Listed as Threatened by the federal government
gpm	gallons per minute
GWh	Gigawatt-hours
H_2O	Water
HAP	Hazardous Air Pollutants
HFC	Hydrofluorocarbons
HSAA	Hazardous Substances Account Act
HWCL	Hazardous Waste Control Law
Hz	Hertz
kVA	Kilovolt ampere
kW-hr	Kilowatt hour
LMGC	Lake Merced Golf Course
LOS	Level of Service
LS	Locally significant
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level
MEA	San Francisco Office of Major Environmental Analysis
mg/L	milligrams per liter
mgd	million gallons per day
MLD	Most Likely Descendant
Muni	San Francisco Municipal Railway
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NO_2	Nitrogen Dioxide
NOI	Notice of Intent
NOT	Notice of Termination
NOx	Nitrogen Oxide
NPDES	National Pollutant Discharge Elimination System
NRDC	National Resources Defense Council
NSMCSD	North San Mateo County Sanitation District
NWIC	Northwest Information Center
Oceanside WPCP	Oceanside Water Pollution Control Plant
OGCC	Olympic Golf and Country Club
OHP	California Office of Historic Preservation
OPR	State of California, Office of Planning and Research
OS	Open Space District
OSHA	Occupational Safety and Health Administration
P	Public District
PEIR	Program Environmental Impact Report
PFC	Perfluorocarbons
PGA tour	Professional Golfers Association Tour
PG&E	Pacific Gas and Electric Company
PM_{10}	Respirable Particulate Matter
$PM_{2.5}$	Fine Particulate Matter
PPM	Parts per Million
PRC	Public Resources Code
psi	pounds per square inch

RCRA	Resource Conservation and Recovery Act of 1974
ROG	Reactive Organic Gases
ROW	Right of Way
RWQCB	Regional Water Quality Control Board
SamTrans	San Mateo County Transit
SARA	Superfund Amendments and Reauthorization Act of 1986
SCADA	Supervisory Control and Data Acquisition
SF_6	Sulfur Hexafluoride
SFDPW	San Francisco Department of Public Works
SFMTA	San Francisco Municipal Transportation Agency
SFPUC	San Francisco Public Utilities Commission
SFSU	San Francisco State University
SIP	State Implementation Plan
SLIC	Spills, Leaks, Investigations, and Cleanups
SMCWPPP	San Mateo Countywide Water Pollution Prevention Program
SO_2	Sulfur Dioxide
SVP	Society of Vertebrate Paleontology
SVWC	Spring Valley Water Company
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACS	Toxic Air Contaminants
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TSCA	Toxic Substances Control Act
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
V	volt
VMT	Vehicle Miles Traveled
WSIP	Water System Improvement Program

SUMMARY

S.1 Introduction

The proposed Project would provide recycled water[1] from the North San Mateo County Sanitation District (District) a subsidiary of the City of Daly City (Daly City) to the Harding Park Golf Course and Fleming Golf Course (referred to jointly herein as Harding Park). The 18-hole Harding Park Golf Course and 9-hole Fleming Golf Course are public golf courses under the jurisdiction of the City and County of San Francisco (San Francisco), through its Recreation and Park Department. Daly City, in partnership with the San Francisco Public Utilities Commission (SFPUC), is proposing this Project, which would use recycled water from the District's existing recycled water facility in Daly City to irrigate Harding Park in San Francisco. The proposed Project consists of construction and operation of the infrastructure necessary to convey recycled water from the District's recycled water facility to the Harding Park irrigation system.

S.2 Harding Park Recycled Water Project Background and Objectives

The SFPUC Water System Improvement Program (WSIP), which was adopted by the SFPUC on October 30, 2008 (SFPUC Resolution 08-0200), includes facility improvement projects designed to: (1) ensure compliance with existing and anticipated future water quality standards under a range of operating conditions; (2) upgrade the seismic standards of critical facilities to improve seismic reliability and reduce the water system's vulnerability to damage from earthquakes; (3) improve water delivery reliability under a variety of operating conditions by improving overall operations of the system; and (4) ensure that SFPUC has an adequate supply of water available to deliver to customers during both non-drought and drought periods through the year 2018. The San Francisco Planning Department, Major Environmental Analysis Division, prepared a Program Environmental Impact Report (PEIR) to evaluate the potential environmental impacts of the WSIP facilities at a programmatic level and to evaluate regional water supply alternatives. The Project that is the subject of this Environmental Impact Report (EIR) is a component of the WSIP; implementation of this Project would contribute to meeting overall WSIP goals and objectives. Specifically, the SFPUC has established a goal of offsetting 10 mgd

1 The recycled water to be supplied would meet standards set forth in Title 22 of the California Code of Regulations for unrestricted use.

of its local retail demand in San Francisco through a combination of conservation, recycled water, and groundwater projects as part of the WSIP. The proposed Project is included in that forecasted offset.

In 2007, Daly City, in coordination with the SFPUC, conducted a feasibility study (Daly City, 2007) to evaluate the provision of recycled water to Harding Park from the Daly City recycled water facility; the result of that feasibility study is the proposed Project as described in this EIR.

The proposed Project is part of the SFPUC's WSIP and would contribute to its goals of diversifying regional water supplies through the development of recycled water as an alternative water supply for non-potable uses. The specific objectives of the proposed Project include:

- Provide up to 0.39 mgd of recycled water to meet average daily demand for irrigating Harding Park;
- Diversify the SFPUC's water supplies for the San Francisco retail service area, consistent with WSIP requirements to reduce retail customer demand;
- Develop a new water supply that is both reliable and drought-resistant; and
- Reduce the use of potable water for irrigation and other non-potable uses by supplying those demands with recycled water.

Daly City is partnering with the SFPUC to promote full and productive use of its recycled water facility for recycled water production, enabling the SFPUC to meet the above objectives for the benefit of the San Francisco retail service area. As such, Daly City serves as the lead agency for the preparation of this EIR, and the SFPUC is a responsible agency. Subject to environmental review and consideration by each party, Daly City and the SFPUC will enter into an agreement to identify the roles and responsibilities of Project construction and implementation.

S.2.1 Overview of SFPUC Regional Water System

This Project is part of the SFPUC regional water system and the information in this section about the SFPUC regional water system provides background and context for this project. The City and County of San Francisco (CCSF), through the SFPUC, owns and operates a regional water system that extends from the Sierra Nevada to San Francisco and serves retail and wholesale customers in San Francisco, San Mateo, Santa Clara, Alameda, and Tuolumne counties. The regional water system consists of water conveyance, treatment, and distribution facilities, and delivers water to retail and wholesale customers. The existing regional system includes over 280 miles of pipelines, over 60 miles of tunnels, 11 reservoirs, 5 pump stations, and 2 water treatment plants. The SFPUC currently delivers an annual average of about 265 million gallons per day (mgd) of water to its customers. The source of the water supply is a combination of local supplies from streamflow and runoff in the Alameda Creek watershed and in the San Mateo and Pilarcitos Creeks watersheds (referred to together as the Peninsula watersheds), augmented with imported supplies from the Tuolumne River watershed. Local watersheds provide about 15 percent of total supplies and the Tuolumne River provides the remaining 85 percent.

The SFPUC serves about one-third of its water supplies directly to retail customers, primarily in San Francisco, and about two-thirds of its water supplies to wholesale customers by contractual agreement. The wholesale customers are largely represented by the Bay Area Water Supply and Conservation Agency (BAWSCA), which consists of 27 total customers. Some of these wholesale customers have other sources of water in addition to what they receive from the SFPUC regional system, while others rely completely on the SFPUC for supply.

SFPUC Water System Improvement Program

On October 30, 2008, the SFPUC adopted a regional Water System Improvement Program (known as the "Phased WSIP Variant") (SFPUC, 2008). The WSIP would improve the regional system with respect to water quality, seismic response, water delivery, and water supply to meet water delivery needs in the service area through the year 2018 and establish level of service goals and system performance objectives. The program area spans seven counties—Tuolumne, Stanislaus, San Joaquin, Alameda, Santa Clara, San Mateo, and San Francisco.

The WSIP includes a water supply strategy and modifications to system operations, and construction of a series of facility improvement projects. The overall goals of the WSIP are to maintain high-quality water; reduce vulnerability to earthquakes; increase delivery reliability and improve the ability to maintain the system; meet customer water supply needs; enhance sustainability in all system activities; and achieve a cost-effective, fully operational system. To further these program goals, the WSIP also includes objectives that address system performance in the areas of water quality, seismic reliability, delivery reliability, and water supply through the year 2018 (see SFPUC Resolution 08-0200).

To address the potential environmental impacts of the WSIP, the San Francisco Planning Department prepared a PEIR on the proposed WSIP, which was certified by the San Francisco Planning Commission on October 30, 2008 (San Francisco Planning Commission Motion No. 17734). At a project-level of detail, the PEIR evaluated the environmental impacts of the WSIP's water supply strategy and, at a program level of detail, it evaluated the environmental impacts of the WSIP's facility improvement projects.

This project-level Draft EIR tiers form the PEIR and also incorporates by reference the relevant analyses of the PEIR with respect to the WSIP's mitigation measures, as applicable to this project. The PEIR is available for public review at the San Francisco Planning Department, 1650 Mission Street, San Francisco, CA 94103, and is on the Planning Department's website at http://www.sfgov.org/planning/mea. State Clearinghouse Number for the PEIR is 2005092026. California Environmental Quality Act (CEQA) permits tiering from a program EIR in order to allow agencies to broadly consider the environmental effects of a series of actions and/or policies and then to provide more detailed examination of project-specific impacts in project-level EIRs. This Project was defined as part of the WSIP in the PEIR and was analyzed in the PEIR as part of the WSIP. This EIR provides more detailed information about the proposed Project, its impacts and Project-specific mitigation measures.

S.3 Project Description

The proposed Harding Park Recycled Water Project (Project) would be located in Daly City in San Mateo County, and in San Francisco (see **Figure S-1**). The proposed Project would receive tertiary treated water from the existing recycled water facility at the District's wastewater treatment plant, adjacent to Westlake Park in Daly City. The water would then be delivered to Harding Park through a recycled water pipeline that would be installed under Lake Merced Boulevard between John Muir Drive in Daly City and the Harding Park maintenance yard near Higuera Avenue in San Francisco; the pipeline would extend from the existing recycled water pipeline that serves the Olympic Club. The proposed underground recycled water storage tank, above-ground pump station, and protective netting would be constructed in the Harding Park maintenance yard along the northern edge of Lake Merced.

The recycled water facilities are authorized by Daly City's National Pollutant Discharge Elimination System (NPDES) Permit to produce a maximum recycled water flow of 2.77 million gallons per day (mgd) and are permitted by the State of California Department of Public Health (CDPH) and the San Francisco Bay Regional Water Quality Control Board (RWQCB) to produce recycled water appropriate for unrestricted use as defined by Title 22 of the California Code of Regulations[2]. The tertiary treatment process includes additional treatment of secondary effluent with chemicals to encourage the minute particles in the water to coagulate (stick together). Then the coagulated water is flocculated (mixed slowly) to help the particles bind together into clusters of particles that can be more easily filtered out. Once coagulated and flocculated, the particles are filtered with sand filters, leaving an effluent relatively free of suspended solids and turbidity. Since the filtered effluent may still contain pathogens, sodium hypochlorite solution, commonly known as industrial grade chlorine bleach, is used to disinfect the filtered plant effluent. The chlorine compounds oxidize the organic material left in the treated wastewater including pathogens and viruses. Gypsum (calcium sulfate) is added after disinfection to condition the recycled water for turf grass irrigation for the golf courses, specifically to adjust the sodium absorption ratio[3] (SAR) so that it does not exceed an SAR value of 3.

Existing recycled water demand was estimated by Daly City in 2006 and showed that the average daily supply for the entire year for all of the existing recycled water users was 0.44 mgd. The average daily supply during the irrigation season (May to October) for all existing recycled water users was 0.89 mgd, the average daily supply during the peak week (seven consecutive days with the highest recycled water demands) was 1.62 mgd, and the peak daily supply was 2.54 mgd. Harding Park's average daily irrigation-season demand would be 0.39 mgd, the average daily demand during a peak week would be 0.78 mgd, and a peak daily demand would be 1.37 mgd. The sum of average daily demand requirements in a peak week for the three existing golf course customers and Harding Park plus existing and future municipal uses is estimated to be 2.63 mgd, which is within the 2.77 mgd permitted production capacity of the recycled water facility.

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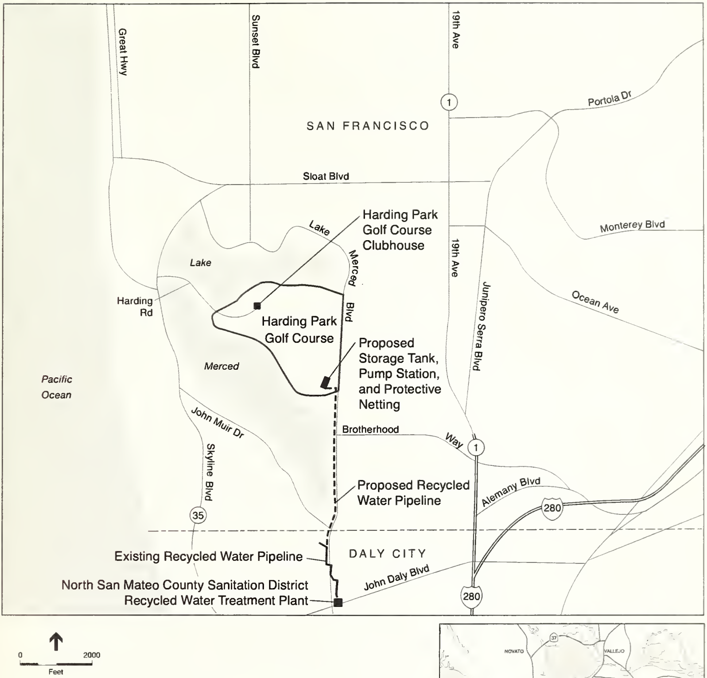
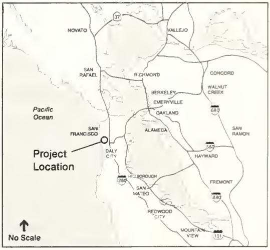
2 Allowable uses for disinfected tertiary treated water as indicated under Title 22 include food crops, parks and playgrounds, school yards, residential landscaping, unrestricted access golf courses, other approved irrigation and recreational impoundments.

3 Sodium absorption ratio measures the ratio of sodium to other ions, and is used to evaluate the potential effect of irrigation water on soil structure.





SOURCE: ESA

Harding Park Recycled Water EIR . 207704

Figure S-1
Regional Location Map

S.3.1 Project Component Design

Based on the demand assumptions, the proposed project includes the following components, each of which is described in detail in Chapter 2 of this EIR:

- Recycled Water Pipeline
- Recycled Water Storage Tank
- Harding Park Pump Station
- Irrigation System Controls
- Protective Netting

Recycled Water Pipeline

The proposed recycled water pipeline would be 4,224 feet (0.8 mile) long with approximately 400 feet of pipeline in Daly City and 3,824 feet of pipeline in San Francisco. The pipe would be made of ductile iron and have an inside diameter of 18 inches. The pipe will be wrapped in a purple polyethylene sleeve and wrapped with tape that identifies it as a recycled water pipe. The pipeline would also include various types of appurtenances, such as isolation valves, blow-off valves, air-release valves and vacuum valves to be located in underground vaults.

The proposed alignment for the recycled water pipeline begins in Daly City underneath Lake Merced Boulevard at an existing 16-inch pipeline that conveys recycled water from the recycled water facilities to the Olympic Club storage tank (Figure S-1). The pipeline alignment follows Lake Merced Boulevard north, terminating at the Harding Park maintenance yard.

Recycled Water Storage Tank

The proposed site for the recycled water storage tank is at Lake Merced Boulevard at Higuera Avenue, under the paved parking lot that serves the Harding Park golf course maintenance building. The site is relatively flat, with grades gently sloping in the south/southwest direction. The ground is currently paved with asphalt. The proposed underground storage tank would be constructed with a capacity of 700,000 gallons. The storage tank top would be sloped and would include a sump for the pump intakes.

Harding Park Pump Station

The proposed pump station would be sited in the northwest corner of the existing Harding Park maintenance yard. The pump station would be approximately 24 feet by 19 feet with a total building height of 16 feet constructed of concrete masonry units interspersed with glass blocks aligned to spell-out “H_2O”, the molecular formula for water. The pump station would have two operating pumps and one standby pump of equal capacity. Therefore, the pump station design would allow for the Harding Park irrigation demands to be met with one pump out of service. Attached to the southeast corner of the pump station building will be a communications antenna (not to exceed 20 feet in height) to allow for remote monitoring of tank water levels.

Irrigation System Controls

The proposed storage tank and pump station process monitoring and control system would consist of instrumentation and control devices designed for automatic control of the recycled water system. The facility would be supervised via the District's Supervisory Control and Data Acquisition (SCADA) system located at the recycled water facility at the District facilities in Daly City. Information and control commands would be relayed between the District facilities and the proposed pump station in Harding Park via radio. The system would be designed to fully integrate with the existing control systems at the District. In addition the control strategies for the recycled water pumps at the District would be revised to provide a fully automated recycled water distribution operation.

Protective Netting

A 30-foot high, 100-foot-long fence composed of protective netting would be installed along the north side of the Harding Park maintenance parking lot. The purpose of the protective netting is to shield cars in the maintenance yard parking lot from damage by errant golf balls lobbed from a nearby tee.

S.3.2 Project Construction

Site clearing and preparation of temporary construction and staging areas for all project components would occur before construction mobilization, including vegetation and debris removal and grading of work areas where necessary to provide a relatively level surface for the movement of construction equipment. Contractors would install the Harding Park recycled water pipeline using conventional, open trench construction methods. Open trench construction would proceed at a rate of about 100 to 300 feet per day. The recycled pipeline would be installed a minimum of 10 feet horizontally from any existing potable water pipelines to comply with Title 22 (*California Code of Regulations Waterworks Standards*). Two types of dewatering discharges may be necessary during Project construction: (1) the new pipelines would be disinfected with potable water prior to use, and disposal of this water would be required; and (2) some dewatering may be required during trenching on Lake Merced Boulevard to the north of John Muir Drive. In both cases, contractors would treat the dewatering effluent, if necessary, before discharging it to the San Francisco combined sewer system. After construction activities are completed, the construction contractor would restore disturbed areas to their preconstruction condition.

S.3.3 Construction Schedule

Construction is expected to begin in March/April 2010 and be completed by August 2011 (approximately 12-16 months). No construction activities will take place at or in the vicinity of Harding Park during a "construction quiet period" of up to 60 days surrounding the October 2010 Charles Schwab Golf Tournament. Construction activities are anticipated to occur from 8:00 a.m. to 5:00 p.m. (Monday-Friday) when construction is taking place in Daly City, and 7:00 a.m. to 5:00 p.m. when construction takes place in San Francisco, as described by the noise regulations for each city in Section 3.6, Noise of this EIR. Construction may occasionally occur in the

evenings and on Saturdays in San Francisco for the pump station and storage tank only, in compliance with the San Francisco municipal code.

S.3.4 Project Operations

This section describes the system operations of the proposed pipeline, pump station and storage tank. Based on recycled water system modeling prepared by project engineers, it was determined that Harding Park could share the Olympic Club's recycled water supply pump and pipeline currently dedicated to the Olympic Club without affecting water deliveries to the Olympic Club or any of the other existing recycled water customers (Daly City, 2007). System operations would alternately pump flows between the two storage tanks at the respective golf courses. This modeling also established the required diameter for the recycled water pipeline extending to Harding Park (i.e., 18 inches in diameter) as well as the size of the proposed storage tank (700,000 gallons).

S.4 Summary of Environmental Impacts and Mitigation

Chapter 4 of this Draft EIR presents the environmental impact analyses for all applicable CEQA topic areas. This chapter also presents mitigation measures that would reduce significant impacts to a less-than-significant level, when feasible. A summary of all impacts and mitigation measures is provided in Table S-1 at the end of this Chapter.

As discussed in Chapter 5 of this EIR, the proposed Project is one of many projects that comprise the SFPUC's WSIP. Implementation of the WSIP would support growth in the SFPUC service area, thereby contributing indirectly to environmental impacts caused by that growth. Because the proposed Project is part of the WSIP and would contribute to the WSIP's growth inducement impact, the Project therefore would contribute to the significant and unavoidable program-level impacts associated with the growth inducement.

S.5 Alternatives to the Proposed Project

Three alternatives, including the No Project Alternative, are evaluated in this Draft EIR. One of the alternatives (Alternative 2: Mitigated Project) would be adjacent to the proposed pipeline alignment and proposes scenarios that would mitigate some of the impacts caused by the proposed alignment. The third alternative examines the use of the proposed recycled water pipeline by other nearby potential customers (see Chapter 4, Alternatives for details).

S.6 Required Actions and Approvals

This EIR provides the information and environmental analysis necessary to assist the public agency decision-makers in considering the approvals necessary for the planning, development, construction, operations and maintenance of the proposed Project. Daly City is the lead agency for the proposed Project under CEQA. As lead agency, Daly City is responsible for reviewing and certifying the adequacy of this EIR and is responsible for taking certain required permit and approval actions on the Project (CEQA Guidelines, Section 15367).

Permits and authorizations that would need to be obtained from federal, state and local agencies to be in compliance with relevant laws and regulations. Currently, there are no federal permits required for this Project and no federal funds have been allocated to the Project. In the future, should federal funding for this Project be available, federal approvals may be required.

References – Summary

City of Daly City, San Francisco Public Utilities Commission, San Francisco Recreation and Park Department (Daly City/SFPUC/SF Recreation and Park), *Harding Park Recycled Water Feasibility Study*, 2007.

San Francisco Public Utilities Commission (SFPUC), *Lake Merced Water Level Restoration Alternatives Analysis Report*, January 2008.

TABLE S-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Land Use		
3.2-1: Physically divide an established community during construction. (Less than Significant)	None required.	Less than Significant
3.2-2: Have a substantial impact upon the existing character of the vicinity during construction. (Less than Significant)	None required.	Less than Significant
3.2-3: Physically divide an established community during operation. (Less than Significant)	None required.	
3.2-4: Have a substantial impact upon the existing character of the vicinity during operation. (Less than Significant)	None required.	
Aesthetics		
3.3-1: Short-term visual impacts during construction. (Less than Significant with Mitigation)	**3.3-1a:** For stationary (non-pipeline) project sites expected to be under construction or in use as a staging area for a period of one year or more, the contractor will ensure that construction-related activity is as clean and inconspicuous as practical by storing building materials and equipment within the proposed construction staging areas or in areas that are generally away from public view and by removing construction debris promptly at regular intervals. An 8-foot high green screening fence will be installed around the perimeter of the Vista Grande Canal staging area. Mitigation Measure 3.6-1 (see Section 3.6, Noise and Vibration) will require that a noise barrier be installed at the pump station and storage tank site. That measure would mitigate temporary visual impacts at the pump station and storage tank site, negating the need for Measure 3.3-1a at that location (as well as the need to preserve the hedge). **3.3-1b:** Minimize tree removal: The contractor will minimize or avoid the removal of existing trees that would screen the proposed pump station. The contractor will consult with a qualified arborist regarding the minimum buffer zones required to prevent root damage to remaining trees and to provide SFPUC with any necessary maintenance requirements for remaining trees.	Less than Significant
3.3-2: Long-term impact on scenic resources and the visual character of the Project area. (Less than Significant)	None required.	
3.3-3: New sources of light or glare. (Less than Significant with Mitigation)	**3.3-3a:** The contractor will ensure that lighting used during any nighttime construction is directed downward and oriented such that no light source is directly visible from neighboring residential areas.	
	3.3-3b: The contractor will: • Require full cutoff, low intensity light fixtures, with no light cast beyond the edge of the Project site as demonstrated by a photometric study of the proposed fixtures.	Less than Significant

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Aesthetics (cont.)		
3.3-3 (cont.)	• Prevent use of highly reflective building materials and/or finishes in the designs for proposed structures, including fencing and light poles. In accordance with Measure 3.3-1b, above, landscaping will be provided around proposed facilities. This vegetation will be selected, placed, and maintained to minimize offsite light and glare in surrounding areas.	
Cultural Resources		
3.4-1: Inadvertent discovery of archaeological resources and human remains. (Less than Significant with Mitigation)	**Measure 3.4-1: *Accidental Discovery Measures.*[4]** To avoid any potential adverse effect from the proposed project on accidentally discovered buried cultural resources as defined in CEQA Guidelines Section 15064.5(a)(c), the SFPUC will distribute the Planning Department's archaeological resource "ALERT" sheet to the project prime contractor; to any project subcontractor firms (including demolition, excavation, grading, foundation, pile driving, etc.); and/or to utilities firm involved in soil-disturbing activities within the project site. Prior to any soils-disturbing activities being undertaken, each contractor is responsible for ensuring that the "ALERT" sheet is circulated to all field personnel including, machine operators, field crew, pile drivers, supervisory personnel, etc. The SFPUC will provide the Environmental Review Officer (ERO) with a signed affidavit from the responsible parties (prime contractor, subcontractor(s), and utilities firm) confirming that all field personnel have received copies of the "ALERT" sheet. If the ERO determines that an archaeological resource may be present within the proposed Project site, the SFPUC will retain the services of a qualified archaeological consultant. The archaeological consultant will advise the ERO as to whether the discovery is an archaeological resource that retains sufficient integrity and is of potential scientific/historical/cultural significance. If an archaeological resource is present, the archaeological consultant will identify and evaluate the archaeological resource. The archaeological consultant will make a recommendation as to what action, if any, is warranted. Based on this information, the ERO may require, if warranted, specific additional measures to be implemented by the SFPUC. Measures might include: preservation in situ of the archaeological resource; an archaeological monitoring program; or an archaeological evaluation program. If an archaeological monitoring program or archaeological testing program is required, it will be consistent with the MEA WSIP Archaeological	Less than Significant

4 WSIP Mitigation Measure 4.7-2b: Accidental Discovery Measures

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Cultural Resources (cont.)		
3.4-1 (cont.)	Guidance (San Francisco Planning Department, 2008) for such programs. The ERO may also require that the SFPUC immediately implement a site security program if the archaeological resource is at risk from vandalism, looting, or other damaging actions. The proposed Project archaeological consultant will submit an accidental discovery Archaeological Data Recovery Report (ADRR) to the ERO which, in addition to the usual contents of the ADRR, includes an evaluation of the historical significance of any discovered archaeological resource, as well as describing the archaeological and historical research methods employed in the archaeological monitoring/data recovery program(s) undertaken, and presenting, analyzing, and interpreting the recovered data. Information that may put at risk any archaeological resource will be provided in a separate removable insert within the final report. Once approved by the ERO, copies of the ADRR will be distributed as follows: the relevant California Historical Resources Information System Information Center will receive one (1) copy and the ERO will receive a copy of the transmittal letter of the ADRR to the Information Center. The MEA will receive three copies of the ADRR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. The SFPUC will receive copies of the ADRR in the number requested. In instances of high public interest in or the high interpretive value of the resource, the ERO may require a different final report content, format, and distribution than that presented above. ***Human Remains and Associated or Unassociated Funerary Objects.***[5] The treatment of human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity will comply with applicable State laws. This will include immediate notification of the coroner of the county within which the project is located and, in the event of the coroner's determination that the human remains are Native American, notification of the California State Native American Heritage Commission (NAHC), who will appoint a Most Likely Descendant (MLD) (PRC Section 5097.98). The archaeological consultant, SFPUC and MLD will make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5(d)). The agreement	

5 From WSIP Mitigation Measure 4.7-2a: Human Remains and Associated or Unassociated Funerary Objects.

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Cultural Resources (cont.)		
3.4-1 (cont.)	should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. California Public Resources Code allows 24 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the reburial method, the Project will follow Section 5097.98(b) of the California Public Resources Code, which states that "the landowner or his or her authorized representative will reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."	
3.4-2: Inadvertent discovery of paleontological resources. (Less than Significant with Mitigation)	**3.4-2:** ***Halt Work If Paleontological Resources are Identified During Construction.***[6] Construction work should be suspended immediately if there is any indication of a paleontological resource. When a paleontological resource (fossilized invertebrate, vertebrate, plant or micro-fossil) is discovered at any of the project sites, an appointed representative of the SFPUC will notify a qualified paleontologist, who will document the discovery as needed, evaluate the potential resource, and assess the significance of the find. When a fossil is found during construction, excavations within 50 feet of the find will be temporarily halted or diverted until the discovery is examined by a qualified paleontologist, in accordance with Society of Vertebrate Paleontology standards (SVP 1995, 1996). The paleontologist will notify the SFPUC to determine procedures to be followed before construction is allowed to resume at the location of the find. If the SFPUC determines that avoidance is not feasible, the paleontologist will prepare an excavation plan for mitigating the effects of the project.	Less than Significant
Transportation and Traffic		
3.5-1: Substantial increase in traffic in relation to existing traffic load and capacity of street system. (Less than Significant with Mitigation)	**3.5-1:** ***Implement Traffic Control Plan.*** A Traffic Control Plan will be prepared in accordance with professional traffic engineering standards to show methods for maintaining traffic flows on roadways directly affected by Project construction, and will include, at a minimum, the following: • Circulation plans will be developed to minimize impacts on local street circulation. Flaggers and/or signage will be used to guide vehicles through and/or around the construction zone. • Truck routes will be identified in the traffic control plan. Haul routes that minimize truck traffic on local roadways and residential streets will be utilized to the extent possible.	Less than Significant

6 WSIP Mitigation Measure 4.7-1: Suspend Construction Work if Paleontological Resource is Identified.

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Transportation and Traffic (cont.)		
3.5-1 (cont.)	• Sufficient staging areas will be provided for trucks accessing construction zones to minimize disruption of access to adjacent land uses. • Access to driveways and private roads will be maintained by using steel trench plates. If access must be restricted for brief periods, property owners will be notified in advance. • Lane closures will be limited during peak hours to the extent possible. Outside of allowed working hours or when work is not in progress, roads will be restored to normal operations, with all trenches covered with steel plates. • Pedestrian and bicycle access and circulation will be maintained during Project construction where safe to do so. If construction activities encroach on a bicycle lane, warning signs will be posted that indicate bicycles and vehicles are sharing the lane. • Detours will be included for bicycles and pedestrians where feasible for portions of Lake Merced Perimeter Trail where potentially affected by Project construction. • All equipment and materials will be stored in designated contractor staging areas on or adjacent to the worksite, in such a manner to minimize obstruction of traffic. • Roadside safety protocols will be implemented. Advance "Road Work Ahead" warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) will be provided to achieve required speed reductions for safe traffic flow through the work zone. • Construction will be coordinated with facility owners or administrators of sensitive land uses such as police and fire stations (including all fire protection agencies), transit stations, hospitals, and schools. Facility owners or operators will be notified in advance of the timing, location, and duration of construction activities and the locations of lane closures. • Construction will be coordinated with local traffic agencies, SFMTA, and SamTrans, to minimize disruption and arrange for the temporary relocation of bus routes or bus stops in work zones as necessary. • Roadway right-of-ways will be repaired or restored to their original conditions or better upon completion of construction.	
3.5-2: Elimination of travel lanes. (Less than Significant with Mitigation)	See Measure 3.5-1.	Less than Significant

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Transportation and Traffic (cont.)		
3.5-3: Displacement of on-street parking due to construction. (Less than Significant)	None required.	Less than Significant
3.5-4: Impaired access to adjacent roadways and land uses. (Less than Significant with Mitigation)	See Measure 3.5-1.	Less than Significant
3.5-5: Increased wear-and-tear on the designated haul routes. (Less than Significant with Mitigation)	**3.5-5:** Daly City and San Francisco will enter into an agreement prior to construction that will detail pre-construction conditions and the post-construction requirements of a roadway rehabilitation program. Roads damaged by construction would be repaired to a structural condition equal to that which existed prior to construction activity.	Less than Significant
Noise and Vibration		
3.6-1: Substantial temporary increase in noise level during construction. (Less than Significant with Mitigation)	**3.6-1:** The contractor will incorporate the following requirements into the contract specifications: • **Construction Hours** *Pipeline Construction* *In Daly City*: Construction activities will be limited to between the weekday hours of 8:00 a.m. and 5:00 p.m. Pipeline construction will not take place on the weekend or after 5:00 p.m. *In San Francisco*: Construction will be limited to between the hours of 7:00 a.m. and 5:00 p.m. Pipeline construction will not take place on the weekend or during evenings. *Pump Station/Storage Tank Construction* *In San Francisco*: Construction will be limited to between the hours of 7:00 a.m. and 5:00 p.m., and may occasionally occur on weekends or evenings (up to 8:00 p.m.). • Equipment and trucks used for construction will use the industry standard noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds, wherever feasible). • At the pump station/storage tank site, the contractor will install temporary sound barriers between the construction site and the closest receptors to reduce noise levels to below the speech interference criterion at the closest receptor (the golf course fairway and the residences east of the site). The elevation of the barrier should be sufficient to interrupt the line-of-sight between the receptors and the tops of stacks (exhaust pipes) of construction equipment by about 5 to 10 feet. Sound-absorbing blankets	Less than Significant

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Noise and Vibration (cont.)		
3.6-1 (cont.)	can also be used at appropriate locations as necessary to protect nearby receptors. Any openings in sound barriers that are provided for truck/vehicle access will be located away from sensitive receptors (i.e., to the south). The contractor will retain an acoustical engineer to provide design specifications for the sound barrier along the golf course. • Stationary noise sources will be located as far from adjacent receptors, whenever feasible, and they will be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible.	
3.6-2: Construction related vibration effects. (Less than Significant with Mitigation)	**3.6.2a:** The contractor will prepare and submit a vibration control plan documenting that proposed construction equipment and methods would comply with the vibration specification of 0.5 in/sec PPV at any structure within 50 feet of the vibration source. Construction equipment and methods would also comply with more stringent standards specified by SFPUC or Daly City for existing utilities located close to locations where pile driving may occur, based on site-specific conditions such as age and composition of existing pipelines and tunnels. If these standards cannot be met, excavation and shoring must occur by other means and pile driving will not be used. **3.6-2b:** Pile holes will be pre-drilled wherever feasible to reduce potential noise and vibration impacts. Where feasible, sonic or vibratory pile drivers will be used instead of impact pile drivers (sonic pile drivers are only effective in some soils). **3.6-2c:** The contractor will limit pile-driving activities to the following areas: Station 28+20; Station 30+25; Station 45+40; and Station 46+20. (All stations are +/- 20 feet.) **3.6-2d:** Pile driving activities shall be prohibited during the evening and nighttime hours (5 p.m. to 8 a.m.).	Less than Significant
3.6-3: Substantial permanent increase in noise level due to Project operation. (Less than Significant)	None required.	
Air Quality		
3.7-1: Construction would generate suspended and inhalable particulate matter. (Less than Significant with Mitigation)	**3.7.1:** During construction, the construction contractor shall be required to implement the following measures required as part of BAAQMD basic dust control procedures required for construction sites. These include: *Basic Controls that Apply to All Construction Sites* a) Water all active construction areas at least twice daily. Watering should be sufficient to prevent airborne dust from leaving the site.	Less than Significant

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Air Quality (cont.)		
3.7-1 (cont.)	b) Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer). c) Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites. d) Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites. e) Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets. Because the proposed Project site is under four acres, the enhanced BAAQMD measures are not required.	
3.7-2: Construction would generate emissions of criteria pollutants. (Less than Significant)	None required.	Less than Significant
3.7-3: Project construction would expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)	None required.	Less than Significant
3.7-4: Project operation would expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)	None required.	Less than Significant
3.7-5: Operational pollutant emissions of criteria air pollutants would result from employee vehicle trips. (Less than Significant)	None required.	Less than Significant
3.7-6: Operational odor emissions. (Less than Significant)	None required.	
Recreation		
3.8-1: Increased deterioration of existing recreational areas. (Less than Significant Impact)	None required.	
3.8-2: Disruption to existing recreational facilities. (Less than Significant with Mitigation)	**3.8-2:** Daly City and San Francisco Recreation and Park Department will provide advance notification to all property owners, residents, and businesses adjacent to construction areas as well as recreation users likely to use trail segments affected by the proposed Project. Advance notification will include posting signage at affected trail segments, as well as written notification to any recreation organizations associated with Lake Merced or Harding Park. The notification will include the name and phone number of the individual to be contacted regarding questions or concerns about construction activity.	Less than Significant

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Recreation (cont.)		
3.8-2 (cont.)	See also Measure 3.5-1 in Section 3.5, Transportation and Traffic, which requires the contractor to prepare a Traffic Control Plan that includes pedestrian/user management actions for trails and sidewalks, including the following: • Pedestrian and bicycle access and circulation will be maintained during Project construction where safe to do so. If construction activities encroach on a bicycle lane, warning signs will be posted that indicate bicycles and vehicles are sharing the lane. • Detours will be included for bicycles and pedestrians where feasible for portions of Lake Merced Perimeter Trail where potentially affected by the proposed Project construction.	
Public Utilities and Services		
3.9-1: Adverse effects on solid waste landfill capacity. (Less than Significant)	None required.	
3.9-2: Temporary increase in demand for fire and police protection due to construction. (Less than Significant)	None required.	
3.9-3: Potential interference with existing utilities. (Less than Significant with Mitigation)	**3.9-3a:** Prior to excavation, the contractor will locate overhead and underground utility lines, such as natural gas, electricity, sewage, telephone, fuel, and water lines that may reasonably be expected to be encountered during excavation work. **3.9-3b:** The contractor will find the exact location of underground utilities by safe and acceptable means, including the use of hand and modern techniques as well as customary types of equipment. Information regarding the size, color, and location of existing utilities must be confirmed before construction activities begin. **3.9-3c:** The contractor will confirm the specific location of the high priority utility –the gas line– and highlight it on all constructions drawings. In the contract specifications, the contractor will be required to provide weekly updates on planned excavation for the upcoming week and identify when construction will occur near a high priority utility. On days when this work will occur, SFPUC construction managers will attend tailgate meetings with contractor staff to review all measures—those identified in the Mitigation Monitoring and Reporting Program and in the construction specifications—regarding such excavations. The contractor's designated health and safety officer will specify a safe distance to work near the gas line, and excavation closer to the pipeline will not be authorized until the designated health and safety officer confirms and documents in the construction records that: (1)	

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Public Utilities and Services (cont.)		
3.9-3 (cont.)	the line was appropriately located in the field by the utility owner using as-built drawings and a pipeline-locating device, and (2) the location was verified by hand by the construction contractor. The designated health and safety officer will provide written confirmation to SFPUC that the line has been adequately located, and excavation will not start until this confirmation has been received. **3.9-3d:** While any excavation is open, SFPUC or its contractors will protect, support, or remove underground utilities as necessary to safeguard employees. **3.9-3e:** SFPUC or its contractors will notify local fire departments any time damage to a gas utility results in a leak or suspected leak, or whenever damage to any utility results in a threat to public safety. **3.9-3f:** SFPUC or its contractors will contact utility owner if any damage occurs as a result of the proposed Project and promptly reconnect disconnected cables and lines with approval of owner. **3.9-3g:** SFPUC or its engineers will coordinate final construction plans and specifications with affected utilities, such as PG&E. **3.9-3h:** SFPUC will notify residents and businesses in project area of potential utility service disruption two to four days in advance of construction.	
Biological Resources		
3.10-1: Disturbance to special-status birds. (Less than Significant with Mitigation)	**3.10-1:** The contractor will implement the following protection elements to avoid disturbing common and special-status nesting birds: • Whenever feasible, vegetation will be removed during the non-breeding season (September 1 to January 31). • For ground disturbing activities occurring during the breeding season (February 1 to August 31), a qualified wildlife biologist will conduct preconstruction surveys of all potential nesting habitat for birds within 500 feet of earthmoving activities. • If active bird nests are found during preconstruction surveys, a 500-foot no-disturbance buffer will be created around active raptor nests during the breeding season or until it is determined that all young have fledged. A 250-foot buffer zone will be created around the nests of other special-status birds. These buffer zones are consistent with CDFG avoidance guidelines; however, they may be modified in coordination with CDFG based on existing conditions at work locations.	Less than Significant

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Biological Resources (cont.)		
3.10-1 (cont.)	• If preconstruction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required. Trees and shrubs that have been determined to be unoccupied by nesting or other special-status birds may be pruned or removed.	
3.10-2: Interference with the movement of native resident bird and bat species. (No Impact)		No impact
3.10-3: Impacts to landmark or other significant trees. (Less than Significant with Mitigation)	**3.10-3:** The contractor will implement the following measures to avoid or reduce impacts on landmark or other significant trees, and street trees:	Less than Significant
	1) Prior to the commencement of construction activities, trees necessary to remove or at risk of being damaged, will be identified. See Figure 2-4 in Chapter 2, Project Description for the identification of the trees to be removed.	
	2) A Department of Public Works inspector or an arborist certified by the International Society of Arboriculture will inventory these trees, with the results of the inventory providing species, size (diameter at breast height), and number of protected trees. Also, in consultation with the Public Works inspector or Zoning Administrator, the arborist will determine if any are heritage or significant trees.	
	3) If any protected trees are identified that will be potentially removed or damaged by construction of the proposed Project, design changes will be implemented, if feasible, to avoid the impact.	
	4) Any protected trees that are removed will be replaced at a ratio of 1:1. Native trees will be replaced with one of the same genus and species; non-native trees will be replaced with a native tree. Foliage protectors (cages and tree shelters) to protect the planted trees from wildlife browse will be installed. The planted trees will be monitored regularly during a minimum two-year establishment period. Maintenance during the plant establishment period will include irrigation. After the establishment period, the native tree plantings are typically capable of survival and growth without supplemental irrigation.	
	5) Implement the proposed planting plan for the proposed Project.	
Geology and Soils		
3.11-1: Slope instability during and after construction. (Less than Significant with Mitigation)	**3.11-1:** The engineer will incorporate recommendations identified in the site-specific geotechnical report (Fugro West, 2008) regarding slope and excavation stabilization measures, including shoring methods and techniques, into construction documents.	Less than Significant

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Geology and Soils (cont.)		
3.11-2: Erosion during construction. (Less than Significant with Mitigation)	See Mitigation Measure 3.12-1 in Section 3.12, Hydrology and Water Quality.	Less than Significant
3.11-3: Seismically induced groundshaking. (Less than Significant with Mitigation)	**3.11-3:** The engineer will incorporate seismic design and construction recommendations from Fugro West's geotechnical report (2008) into project design documents to minimize the potential for seismic hazards. Such measures will ensure that the underground storage tank, recycled water pipeline, and irrigation pump station are designed and constructed to resist lateral forces generated by earthquake shaking and seismic ground failure.	Less than Significant
3.11-4: Seismically induced ground failure, including liquefaction and settlement. (Significant)	See Mitigation Measure 3.11-3 above.	Less than Significant
3.11-5: Project located on expansive or corrosive soils. (Significant)	**3.11-5:** The engineer will incorporate expansive soil and corrosion recommendations from Fugro West's geotechnical report (2008) into Project design documents.	Less than Significant
Hydrology and Water Quality		
3.12-1: Degradation of water quality during construction. (Less than Significant with Mitigation)	**3.12-1a:** For construction activities that would occur within Daly City, Daly City will file a Notice of Intent (NOI) to the SWRCB, develop a Storm Water Pollution Prevention Plan (SWPPP), and file a Notice of Termination (NOT) at the end of construction. The SWPPP will be maintained at the construction site for the entire duration of construction. The objectives of the SWPPP are to identify pollutant sources that may affect the quality of stormwater discharge and to implement BMPs to reduce pollutants in stormwater discharges. At a minimum, the SWPPP would include the following: • Site maps showing the construction site perimeter, existing and proposed structures, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and pre- and post-construction drainage patterns at the sites; • Description of construction materials, practices, and designated areas for equipment storage and maintenance; • List of contaminants with the potential to contact stormwater; • Description of BMPs that minimize contact of contaminants with stormwater and minimize exposure of stormwater to construction materials, equipment, vehicles, and waste;	Less than Significant

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Hydrology and Water Quality (cont.)		
3.12-1 (cont.)	• Description of site-specific erosion and sedimentation control practices and BMPs to be implemented during construction (i.e., use of sandbag barriers or fiber bags around construction sites to break up slope length or flow), including the location where those BMPs will be placed; • A schedule for inspecting and monitoring of BMPs; and • Spill prevention and cleanup plan for rapid response to spills and/or emergencies. **3.12-1b:** For construction activities within San Francisco, the contractor will implement the following BMPs required under the City's pollution prevention program and Article 4.1 of San Francisco's Public Works Code: • Identify all storm drains and catch basins near the construction site and ensure all workers are aware of their locations to prevent pollutants from entering them. • Protect all storm drain and catch basin inlets. • Develop an erosion control and sediment control plan for wind and rain. • Develop spill response and containment procedures. • Inspect site regularly to ensure that BMPs are intact. • Conduct daily site cleanings as needed. • Educate employees and subcontractors about BMPs. • Regularly maintain all BMPs at project site. The SFPUC must review and approve the erosion control and sediment control plan prior to implementation, and conducts periodic inspections to ensure compliance with the plan.	
3.12-2: Flooding due to siltation from construction activities. (Less than Significant with Mitigation)	See Mitigation Measures 3.12-1a and 3.12-1b.	Less than Significant
3.12-3: Discharge of contaminated water during construction. (Less than Significant with Mitigation)	**3.12-3:** contractor will comply with the industrial waste discharge permit requirements by the SFPUC Wastewater Enterprise for dewatering activities. • The SFPUC Wastewater Enterprise could require compliance with certain provisions in the permit such as treatment of the flows prior to discharge. The groundwater removed by dewatering would be discharged to the sanitary sewer system with authorization of and required permits from the applicable regulatory agencies, in this case SFPUC Wastewater Enterprise. The contractor will comply with applicable permit conditions	Less than Significant

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Hydrology and Water Quality (cont.)		
3.12-3 (cont.)	associated with the treatment of groundwater within their jurisdiction prior to discharge. If necessary, a dewatering collection and disposal method will be identified at channel crossings.	
3.12-4: Change in impervious surfaces. (Less than Significant)	None required.	Less than Significant
3.12-5: Redirecting or impeding flood flows. (Less than Significant)	None required.	Less than Significant
3.12-6: Discharge of contaminated water to surface water. (Less than Significant with Mitigation)	See Mitigation Measure 3.12-3 above.	Less than Significant
3.12-7: Surface and groundwater quality affected by recycled water. (Less than Significant)	None required.	Less than Significant
Hazards and Hazardous Materials		
3.13-1: Hazardous materials in soil and groundwater. (Less than Significant with Mitigation)	**3.13-1:** The engineer will incorporate the following requirements into the contract specifications: • The contractor will prepare a Site Health and Safety Plan identifying the potential chemicals present, potential health and safety hazards, monitoring to be performed during site activities, soils-handling methods required to minimize the potential for exposure to harmful levels of any chemicals identified in the soil, appropriate personnel protective equipment, and emergency response procedures. • The contractor will prepare a Materials Disposal Plan that specifies the methods for stockpiling suspect soils, protocol for profiling suspect soils, disposal method and approved disposal site for any potential contaminated soil and will provide written documentation that the disposal site will accept the waste.	Less than Significant
3.13-2: Release of hazardous materials from construction equipment. (Less than Significant)	None required	Less than Significant
Energy Resources		
3.14-1: Use of large amounts of fuel, water, or energy during construction. (Less than Significant with Mitigation)	**3.14-1:** To limit exhaust emissions during the construction of the proposed Project the following exhaust controls, as set forth by the BAAQMD, will be implemented where applicable: • Grid power will be used instead of diesel generators at all construction sites where it is feasible to connect to grid power. While it may not be practical to connect to grid power for pipeline projects (since construction	Less than Significant

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Energy Resources (cont.)		
3.14-1 (cont.)	sites keep moving along the alignments), grid power shall be used for projects with fixed locations, such as tunnel entry and exit shafts/portals. • All proposed Project contracts specifications shall include Sections 2480 and 2485, Title 13, California Code of Regulations, which limit the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds, both California- or non-California-based trucks) to 30 seconds at a school or five minutes at any location. In addition, the use of diesel auxiliary power systems and main engines shall be limited to five minutes when within 100 feet of homes or schools while the driver is resting. • All proposed Project contracts specifications shall include Section 93115, Title 17, California Code of Regulations, Airborne Toxic Control Measure for Stationary Compression Ignition Engines, which specifies fuel and fuel additive requirements; emission standards for operation of any stationary, diesel-fueled, compression-ignition engines; and operation restrictions within 500 feet of school grounds when school is in session. • A schedule of low-emissions tune-ups shall be developed and such tune-ups shall be performed on all equipment, particularly for haul and delivery trucks. A log of required tune-ups shall be maintained and a copy of the log shall be submitted to the SFPUC on a monthly basis for review. • Low-sulfur fuels shall be used in all stationary and mobile equipment.	
3.14-2: Use of large amounts of fuel, water, or energy during operations. (Less than Significant with Mitigation)	**3.14-2:** Consistent with the Energy Action Plan II priorities for reducing energy usage, the SFPUC will ensure that energy efficient equipment is used in all WSIP projects. A repair and maintenance plan will also be prepared for each facility to minimize power use.	Less than Significant
Cumulative Impacts		
5.1: Cumulative disruption of established communities and changes in existing land patterns.	None required.	
5.2: Cumulative impacts on visual character.	None required.	
5.3: Cumulative increase in impacts on archaeological, paleontological, and historical resources.	None required.	
5.4: Cumulative traffic increases on local and regional roads.	**5.4-1:** In the event that more than one construction contract is issued for work along the proposed Project pipeline, and where construction could occur within and/or across multiple streets in the same vicinity, the SFPUC and construction contractor(s) will coordinate the traffic control plans in order to mitigate the impact of traffic disruption. The coordinated plan will include	Less than Significant

TABLE S-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Cumulative Impacts (cont.)		
5.4 (cont.)	measures that address overlapping construction schedules and activities, struck arrivals and departures, land closures and detours, and the adequacy of on-street staging requirements.	
5.5: Cumulative increases in construction and/or operational noise.	None required.	
5.6-2: Cumulative increases in construction and/or operational emissions.	None required.	
5.7: Cumulative effects on recreational resources during construction.	None required.	
5.8: Cumulative impacts related to disruption of utility service or relocation of utilities.	None required.	
5.9: Cumulative loss of sensitive biological resources.	None required.	
5.10: Cumulative exposure of people or structures to geologic and seismic hazards.	None required.	
5.11: Cumulative impacts related to the degradation of water quality, alteration of drainage patterns, increased surface runoff, and flooding hazards.	None required.	
5.12: Cumulative effects related to hazardous conditions and exposure to or release of hazardous materials.	None required.	
5.13: Cumulative increases in the use of nonrenewable energy resources.	None required.	

CHAPTER 1
Introduction

1.1 Introduction

The proposed Project would provide recycled water from the North San Mateo County Sanitation District (District), a subsidiary of the City of Daly City (Daly City) to irrigate the 18-hole Harding Park and 9-hole Fleming Golf Courses (referred to jointly herein as Harding Park), public golf courses under the jurisdiction of the City and County of San Francisco (San Francisco) through its Recreation and Park Department. Daly City, in partnership with the San Francisco Public Utilities Commission (SFPUC), is proposing this project, which would use recycled water produced at the existing recycled water treatment facility at the District's wastewater treatment plant in Daly City. The proposed Project consists of construction and operation of the infrastructure necessary to convey recycled water from the recycled water facility to the Harding Park irrigation system.

1.2 Project Background

San Francisco, through the SFPUC, owns and operates a regional water system that extends from the Sierra Nevada Mountains to San Francisco. This system serves 2.4 million people primarily in San Francisco, San Mateo, Santa Clara, and Alameda Counties. The SFPUC has developed a regional Water System Improvement Program (WSIP), which was funded through voter-approved bond measures in 2002, to repair, replace, and seismically upgrade the system's aging pipelines, tunnels, reservoirs, pump stations, and storage tanks.

The proposed Harding Park Recycled Water Project ("Project") is one of the projects funded through the WSIP bond measure Proposition A (Assembly Bill No. 1823). Many of the activities and projects that are part of the WSIP were subject to environmental review in the Program Environmental Impact Report (PEIR) prepared for the WSIP, which was certified by the San Francisco Planning Commission in October 2008 (San Francisco Planning Department, 2008). The provision of recycled water to customers in San Francisco such as Harding Park was contemplated in the WSIP PEIR. This document describes and evaluates the specific actions that pertain to providing recycled water to Harding Park.

1.3 Purpose of the EIR

Daly City owns and operates a recycled water facility with sufficient capacity to provide irrigation water to Harding Park. As such, Daly City proposes to provide recycled water for this Project and serves as the lead agency responsible for the preparation of this Draft Environmental Impact Report (EIR) in compliance with the California Environmental Quality Act (CEQA) and the CEQA Guidelines. The SFPUC proposes to construct and operate the transmission lines, pump station, and storage tank necessary to convey the water to Harding Park and is therefore a partner in this Project and serves as a responsible agency for this EIR, in accordance with CEQA.

The EIR is a public document for use by Daly City, the SFPUC, other governmental agencies, and the public to identify and evaluate the potential environmental consequences of the Project, identify mitigation measures to lessen or eliminate adverse impacts, and examine feasible alternatives to the Project. The impact analyses in this report are based on a variety of sources; references for these sources are listed at the end of each technical section. The information contained in this EIR will be reviewed and considered by Daly City and the SFPUC prior to the ultimate decision to approve, disapprove, or modify the proposed Project.

1.4 CEQA Process

An Initial Study was not prepared because it was determined in advance that an EIR would be prepared for this Project. In compliance with CEQA, the environmental review process for the proposed Project is described below.

1.4.1 Notice of Preparation

In accordance with Sections 15063 and 15082 of the CEQA Guidelines, as Lead Agency, Daly City prepared a Notice of Preparation (NOP) for this EIR. The NOP was circulated to local, state, and federal agencies on January 5, 2009. The NOP provided a general description of the proposed action, the location of the proposed facilities, and a preliminary list of potential environmental impact areas. The NOP and other information related to the proposed Project were posted on the Daly City and SFPUC websites.

1.4.2 Public Scoping Period

Pursuant to CEQA Guidelines Section 15083, Daly City provided an opportunity for governmental agencies and the public to provide comments on the issues and scope of the EIR for a 30-day period from January 5, 2009 to February 5, 2009. Daly City also held a public scoping meeting on January 28, 2009 at the Larcombe Clubhouse at Westlake Park in Daly City. Two members of the general public attended and provided comments during the meeting. An additional four comment letters were received by Daly City by fax and by mail. Written comments received during the scoping period are part of the Project record and are included in Appendix A. Daly City has reviewed and considered oral and written comments in preparing this EIR. A summary of these comments is provided in **Table 1-1**, which shows the issues raised that pertain to the scope and content of this EIR and indicates the EIR section in which the issue is addressed.

TABLE 1-1
SUMMARY OF SCOPING COMMENTS[a]

Comment/Issue	Addressed in this EIR
Project compliance with Title 22	Section 3.12, Hydrology and Water Quality
Water quality of the existing water treatment facility	Section 3.12, Hydrology and Water Quality
Will there be any studies of other development in the future? Could the pipe handle capacity for future growth?	Chapter 4, CEQA Alternatives
Concern that the street [Lake Merced Blvd] would need to be dug up again to install a larger pipe	Not necessary, see Chapter 4, CEQA Alternatives
Impact on Harding Park maintenance parking lot. How long will the parking lot be unusable?	Chapter 2, Project Description
Concerned that the area where the pipe will be placed is geologically unstable.	Section 3.11, Geology and Soils
Is there an odor to recycled water?	Section 3.7, Air Quality
Will this water be used for anything other than the golf courses? Can it be used in other areas?	This project is specifically for the irrigation of the Harding Park Golf Course and Fleming Golf Course (Harding Park); Recycled water provided by the Project meets Title 22 guidelines for use in other areas.
Is it appropriate in natural areas? Does it have any known effects on fish/wildlife/vegetation?	Landscaping included as part of this Project will be irrigated with recycled water. The tertiary treated water meets Title 22 standards for the proposed application. Application to natural areas is not proposed as part of this project.
Will the individual traffic lanes or the entire Lake Merced Boulevard be closed at any time during construction?	Section 3.5, Transportation and Traffic
Is there an existing purple pipe?	Chapter 2, Project Description
The EIR should clearly indicate the commitments to water conservation and recycling made by all agencies that rely on the San Francisco Regional Water System, not just San Francisco.	Chapter 2, Project Description
The EIR should clearly identify that the Project provides a benefit to San Francisco retail service area only and does not provide a regional benefit to the wholesale customers who rely on the San Francisco Regional Water System.	Chapter 2, Project Description
An encroachment permit is required when the project involves work in the State's right of way.	Construction activities will not occur in a state right-of-way
Traffic impacts should be evaluated and a determination of whether a Traffic Impact Study is warranted.	A Traffic Impact Study is not warranted, see Section 3.5, Transportation and Traffic
If construction activities are proposed within the State's right of way, documented results of a current archaeological record search from the Northwest Information Center of the California Historical Resources Information System is required before an encroachment permit can be issued.	Construction activities will not occur in a state right-of-way
Identify potential impacts to existing land uses.	Section 3.2, Land Use
Identify potential impacts to visual character.	Section 3.3, Aesthetics
Identify potential impacts to traffic circulation and safety during project construction.	Section 3.5, Transportation and Traffic
Identify whether projected road closures might affect access to GGNRA lands such as Fort Funston or Ocean Beach.	Lane closures will not affect access to GGNRA lands.

TABLE 1-1 (Continued)
SUMMARY OF SCOPING COMMENTS[a]

Comment/Issue	Addressed in this EIR
Include an assessment of any potential cumulative effects of the proposed actions with those associated with the Vista Grande Project.	See Section 5.3, Cumulative Impacts
The Parkmerced project would like to utilize recycled water from the Harding Park project and requests that the demand projections for the Harding Park Recycled Water Project include Parkmerced Project's potential use of approximately 0.22 million gallons per day of recycled water per peak month for irrigation and approximately 0.26 million gallons per day of recycled water on average for residential toilet flushing and laundry.	Service to Parkmerced is not proposed as part of the Harding Park Project. Implementation of the Project does not preclude SFPUC and Daly City from evaluating a proposal to provide recycled water service to Parkmerced in the future.

[a] Sources include written responses to the NOP and oral comments made at the public scoping meeting held for the proposed Project.

1.4.3 Draft Environmental Impact Report

This document constitutes the Draft EIR. It describes the proposed Harding Park Recycled Water Project and the environmental setting for the Project, evaluates Project impacts, identifies mitigation measures for impacts found to be significant, and presents an analysis of Project alternatives. This EIR is an informational document that does not, in and of itself, determine whether the Project will be approved; rather, it is intended to aid the planning and decision-making process by disclosing the physical environmental effects of the proposed Project and identifying possible ways of reducing or avoiding its potentially significant impacts.

Significance criteria have been developed for each environmental issue analyzed in this EIR and are defined at the beginning of each impact analysis section. Impacts are analyzed and the significance of the impact is categorized as follows:

- Significant, unavoidable
- Significant, but can be mitigated to a less-than-significant level
- Potentially significant, but can be mitigated to a less-than-significant level
- Less than significant (mitigation is not required under CEQA, but may be recommended)
- No impact

1.4.4 Public Review of the Draft EIR

This document will be available to local, state, and federal agencies and to interested organizations and individuals who may wish to review and comment on the report. Notice of this Draft EIR will also be sent directly to every agency, person, or organization that commented on the NOP. Publication of this Draft EIR marks the beginning of a 45-day public review period, during which Daly City will accept comments on the EIR. Daly City will also conduct a public

meeting on **August 12, 2009** to answer questions about, and to receive oral comment on, the EIR at the location listed below.

Location: Larcombe Clubhouse (in Westlake Park)
Address: 99 Lake Merced Blvd., Daly City, CA
Date and Time: August 12, 2009 at 7:00 p.m.

During the 45-day review period, written comments should be mailed or faxed to:

Patrick Sweetland, Director
Department of Water and Wastewater Resources
Harding Park Recycled Water Project EIR
153 Lake Merced Blvd.
Daly City, CA 94105
Fax: 650-991-8220

1.4.5 Final EIR and Certification

Written and oral comments received on this Draft EIR will be addressed in a Response to Comments document which, together with this Draft EIR, will constitute the Final EIR. The Response to Comments document will also stipulate any changes to the Draft EIR resulting from public and agency input. The Final EIR will be distributed to all entities that submit comments on the EIR, as well as those decision-makers with authority over the EIR and the proposed Project. The Final EIR will also be made publicly available through the Daly City and SFPUC websites.

After the Final EIR has been completed, the North San Mateo County Sanitation District (the District) will consider EIR certification at a regularly scheduled Board meeting. The SFPUC will subsequently consider approval of the project, and adopt relevant CEQA Findings and mitigation measures. Upon EIR certification, Daly City and the SFPUC may proceed with project approval actions.

The respective roles and responsibilities of each agency will be identified in an agreement entered into between Daly City and the SFPUC. This agreement will govern the sharing of responsibilities for any project actions undertaken, including mitigation.

CEQA requires that the Lead Agency neither approve nor implement a project unless the project's significant environmental effects have been reduced to less-than-significant levels, essentially "eliminating, avoiding, or substantially lessening" the expected impacts unless specific findings are made. If the Lead Agency approves the project despite residual significant adverse impacts that cannot be mitigated to less-than-significant levels, the agency must state the reasons for its action in writing. This Statement of Overriding Considerations must be included in the record of project approval.

1.4.6 Mitigation Monitoring and Reporting

State law requires lead agencies to adopt a Mitigation Monitoring and Reporting Program (MMRP) for those changes to the project that it has adopted or made a condition of project

approval in order to mitigate or avoid significant effects on the environment. Based on the roles and responsibilities identified by agreement between Daly City and the SFPUC, each party will adopt corresponding mitigation measures through its approval action.

CEQA Guidelines do not require that the specific MMRP be included in the EIR. Throughout this EIR, however, proposed mitigation measures have been clearly identified and presented in language that will facilitate establishment of a monitoring program. All adopted measures will be included in an MMRP under separate cover.

1.5 Organization of the Draft EIR

The EIR is organized into six chapters, preceded by the Table of Contents, list of acronyms, and a Summary. A brief summary of the contents of this EIR is presented below.

Summary. The Summary, prepared in accordance with CEQA Guidelines Section 15123, contains an overview of key elements of the EIR. The chapter summarizes: the project description and characteristics and all environmental impacts and mitigation measures in a table format, indicating the level of significance of each impact before and after mitigation.

Chapter 1 – Introduction. The Introduction describes the Project background, environmental review processes for the Project, and the organization of the EIR.

Chapter 2 – Project Description. The Project Description contains a discussion of the proposed Project through text, figures, and tables. Specifically, this chapter includes an overview of the Project and a description of the project's location, objectives, and characteristics, including both construction and operational phases of the Project. The description of the Project is provided in sufficient detail to allow analysis of potential environmental impacts.

Chapter 3 – Environmental Setting and Impacts. The majority of the environmental impact evaluation for the proposed Project is contained in this chapter. A description of the physical setting for each environmental topic is provided, along with the regulatory framework that describes the applicable laws and regulations pertinent to the topic. For purposes of this EIR, the setting describes the existing physical characteristics of the project area and its surroundings that may be affected by the project as of the date the NOP was issued. The environmental impacts include the anticipated changes to physical conditions if the project were implemented. Mitigation measures are proposed for any significant or potentially significant impact that would result from the proposed Project.

Environmental impacts are numbered throughout this chapter, beginning with the section number, followed by sequentially numbered impacts. For example, the first impact in Section 3.2, Land Use, is Impact 3.2-1, and the second is Impact 3.2-2. Mitigation measures are numbered to correspond to impacts; therefore, mitigation measures to address Impacts 3.2-1 and 3.2-2 would be Mitigation Measures 3.2-1 and 3.2-2, respectively.

Chapter 4 – CEQA Alternatives. In accordance with CEQA Guidelines Section 15126.6, Chapter 4 of the EIR presents a range of reasonable alternatives designed to attain most of the basic objectives of the proposed Project and avoid or substantially reduce significant Project effects. The potential environmental impacts of the alternatives are discussed in comparison to the impacts that would result from the proposed Project and the advantages and disadvantages of each alternative are presented.

Chapter 5 – Other Topics Required by CEQA. Chapter 5 includes CEQA-mandated sections examining the potential growth-inducing effects of the proposed Project and the proposed Project's cumulative impacts. Cumulative impacts refer to two or more individual effects that, when considered together, compound other environmental impacts. In accordance with CEQA Guidelines Section 15355, the analysis in Chapter 5 examines the potential for cumulative impacts of the proposed Project in conjunction with related past, present, and foreseeable future programs and projects.

Chapter 6 – EIR Authors, Persons, and Organizations Contacted. This chapter identifies the individuals who were involved in preparing the EIR. Persons and organizations contacted during preparation of the EIR are referenced at the end of each chapter or section.

1.6 Resources Evaluated in EIR

This EIR evaluates those environmental topics for which impacts have been identified as potentially significant. Agricultural Resources, Mineral Resources, and Population and Housing are issue areas where it was determined that no impacts would occur as described in the proposed Project's Notice of Preparation.[1] Therefore, these resource areas are not evaluated in this document. The impact areas evaluated herein are:

- Land Use
- Aesthetics
- Cultural Resources
- Transportation and Traffic
- Noise and Vibration
- Air Quality
- Recreation
- Public Utilities and Services
- Biological Resources
- Geology and Soils
- Hydrology and Water Quality
- Hazards and Hazardous Materials
- Energy Resources

1.7 References

San Francisco Planning Department, *Water System Improvement Program Program EIR*, Case No. 2005.0159E, October 2008.

[1] The Harding Park Notice of Preparation is located at http://www.dalycity.org/city_news/news/Harding%20Park%20final%20NOP_010509.pdf

CHAPTER 2
Project Description

2.1 Project Location and Existing Facilities

2.1.1 Project Summary

The proposed Project would provide Title 22 compliant recycled water from the North San Mateo County Sanitation District (District), a subsidiary of the City of Daly City (Daly City) to the Harding Park Golf Course and Fleming Golf Course (referred to jointly herein as Harding Park). The 18-hole Harding Park Golf Course and 9-hole Fleming Golf Course are public golf courses under the jurisdiction of the City and County of San Francisco (San Francisco), through its Recreation and Park Department. Daly City, in partnership with the San Francisco Public Utilities Commission (SFPUC) is proposing this Project, which would use recycled water from the District's existing recycled water facility in Daly City to irrigate Harding Park in San Francisco. The proposed Project consists of construction and operation of the infrastructure necessary to convey recycled water from the District's recycled water facility to the Harding Park irrigation system.

2.1.2 Regional Project Location

The proposed Project would be located in Daly City in San Mateo County, and in San Francisco. The proposed Project would receive tertiary treated water from the existing recycled water

facility at the District's wastewater treatment plant, adjacent to Westlake Park in Daly City (see **Figure 2-1**). The water would then be delivered to Harding Park through a recycled water pipeline that would be installed under Lake Merced Boulevard between John Muir Drive in Daly City and the Harding Park maintenance yard near Higuera Avenue in San Francisco; the pipeline would be extended from the existing recycled water pipeline that serves the Olympic Club. The proposed underground recycled water storage tank, above-ground pump station, and protective netting would be constructed in the Harding Park maintenance yard along the northern edge of Lake Merced (see **Figure 2-2**).

2.1.3 Existing Facilities

North San Mateo County Sanitation District Recycled Water Treatment Plant

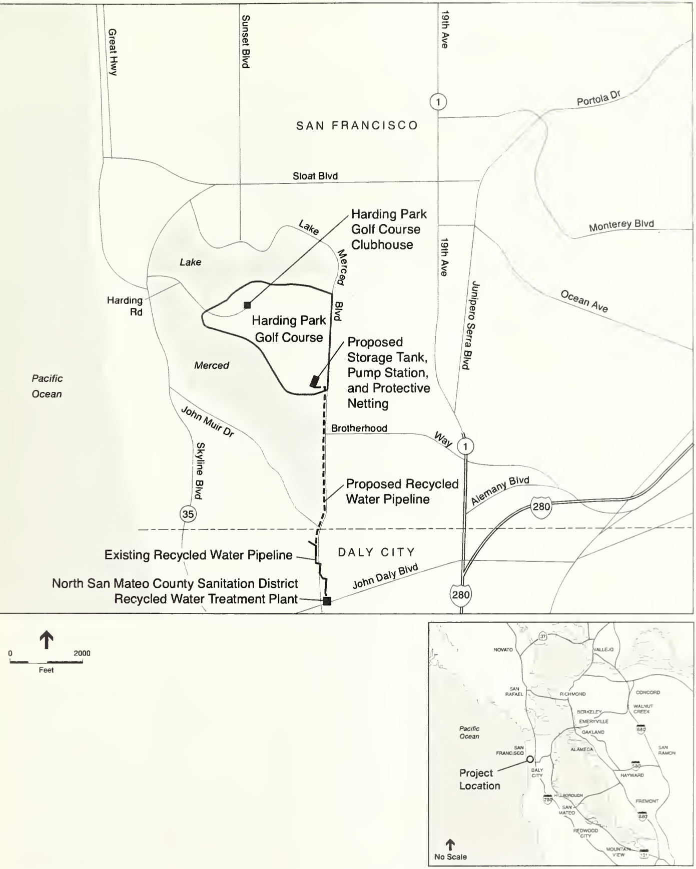
In 2003, the District, a subsidiary of Daly City (pursuant to an action in 1985 by the San Mateo County Local Agency Formation Committee), added tertiary treatment facilities to their wastewater treatment plant to produce recycled water in compliance with Title 22 of the California Code of Regulations. Since 2004, the recycled water facility has supplied recycled water to four customers: the San Francisco Golf Club, the Olympic Club, the Lake Merced Golf Club, and Daly City (for irrigation of Westlake Park and the John Daly Boulevard median). The recycled water facilities are authorized by Daly City's National Pollutant Discharge Elimination System (NPDES) Permit to produce a maximum recycled water flow of 2.77 million gallons per day (mgd).

Tertiary Treatment Process

The recycled water facilities are permitted by the State of California Department of Public Health (CDPH) and the San Francisco Bay Regional Water Quality Control Board (RWQCB) to produce recycled water appropriate for unrestricted use as defined by Title 22 of the California Code of Regulations.[1] The tertiary treatment process includes additional treatment of secondary effluent with chemicals to encourage the minute particles in the water to coagulate (stick together). Then the coagulated water is flocculated (mixed slowly) to help the particles bind together into clusters of particles that can be more easily filtered out. Once coagulated and flocculated, the particles are filtered with sand filters, leaving an effluent relatively free of suspended solids and turbidity. Since the filtered effluent may still contain pathogens, sodium hypochlorite solution, commonly known as industrial grade chlorine bleach, is used to disinfect the filtered plant effluent. The chlorine compounds oxidize the organic material left in the treated wastewater including pathogens and viruses. Gypsum (calcium sulfate) is added after disinfection to condition the recycled water for turf grass irrigation for the golf courses, specifically to adjust the sodium adsorption ratio[2] (SAR) so that it does not exceed an SAR value of 3.

1 Allowable uses for disinfected tertiary treated water as indicated under Title 22 include food crops, parks and playgrounds, school yards, residential landscaping, unrestricted access golf courses, other approved irrigation and recreational impoundments.

2 Sodium adsorption ratio measures the ratio of sodium to other ions, and is used to evaluate the potential effect of irrigation water on soil structure.



OURCE: ESA

Harding Park Recycled Water EIR . 207704

Figure 2-1
Regional Location Map

Distribution of Recycled Water

After the tertiary treatment process, the recycled water is either stored in existing underground equalization basins at the recycled water facility or pumped to one of the four recycled water users through a pipeline distribution system. The recycled water pump station at the recycled water facility has a dedicated recycled water pump for each golf course; the Olympic Club also has a standby pump and the Lake Merced and San Francisco Clubs share a common standby pump. Facility operators pump recycled water to storage tanks at each golf course; the golf courses then pump the water from the tanks into their irrigation systems. Currently, any two golf course storage tanks can be supplied simultaneously. The existing customers (Olympic Club, Lake Merced Golf Course, San Francisco Golf Course and Daly City) have priority on the available recycled water; Harding Park would be the last customer served on a peak day.

Olympic Club Recycled Water Pipeline

An existing 16-inch pipeline delivers recycled water from the recycled water facility to the Olympic Club storage tank. This pipeline runs underground from the recycled water facility along Lake Merced Boulevard to just south of Lake Merced at the intersection of Lake Merced Boulevard and John Muir Drive where the line turns west to the Olympic Club. The proposed 18-inch recycled water pipeline for Harding Park would connect to this existing pipeline where it turns to the west into the Olympic Club; the new 18-inch pipeline would then continue north underneath Lake Merced Boulevard to Harding Park.

Harding Park Golf Course Irrigation System

The Harding Park irrigation system was originally designed as a dual system with potable water to greens and tees and recycled water to the fairways and other portions of the course. The ductile iron portion of the fairway pipe is labeled as recycled water. Currently both systems are fed with potable water from the SFPUC's Retail Water Distribution System. The dual system would be converted to recycled water during this proposed Project. Harding Park underwent an extensive renovation in 2003 to prepare for future Professional Golfers Association Tour (PGA Tour) events. As part of the renovation project, the potable water connections and golf course irrigation system were replaced. Harding Park has six connections to the SFPUC Retail Water Distribution System. An 8-inch diameter fire protection, a 6-inch diameter irrigation, and a 2-inch diameter domestic line are connected to a 12-inch diameter domestic feeder main located in Lake Merced Boulevard to the east of the Harding Park maintenance yard. Near the 12th tee, an 8-inch diameter fire protection and a 3-inch diameter domestic line are connected to the 60-inch diameter Sunset Supply Line. Previously a 6-inch diameter irrigation line was also connected to the Sunset Supply Line; however, in late 2008, it was capped off and is no longer available for use. In addition, an older 4-inch diameter potable water pipeline, which originates from a pipeline near Skyline Boulevard, is located under the western section of Harding Park.

The Harding Park irrigation system is composed of an extensive network of underground piping including two separate irrigation systems, one for fairways and one for tees and greens. Both irrigation systems are supplied from the 6-inch diameter irrigation pipeline to the east of the

SOURCE: ESA and Carollo

Figure 2-2
Harding Park Pipeline Route and Project Area

maintenance yard. The irrigation pipeline splits into a 6-inch diameter pipe that supplies irrigation water to the tees and greens and a 12-inch diameter pipe that feeds the fairway irrigation system. The combined flow and pressure requirement for both systems is 1,500 gallons per minute (gpm) at 95 pounds per square inch (psi) (Mitchell, 2008, 2009).

2.2 Project Goals and Objectives

2.2.1 Water System Improvement Program

The SFPUC Water System Improvement Program (WSIP), which was adopted by the SFPUC on October 30, 2008 (SFPUC Resolution 08-0200), includes facility improvement projects designed to: (1) ensure compliance with existing and anticipated future water quality standards under a range of operating conditions; (2) upgrade the seismic standards of critical facilities to improve seismic reliability and reduce the water system's vulnerability to damage from earthquakes; (3) improve water delivery reliability under a variety of operating conditions by improving overall operations of the system; and (4) ensure that SFPUC has an adequate supply of water available to deliver to customers during both non-drought and drought periods through the year 2018. The San Francisco Planning Department, Major Environmental Analysis Division, prepared a Program Environmental Impact Report (PEIR) to evaluate the potential environmental impacts of the WSIP facilities at a programmatic level and to evaluate regional water supply alternatives. The Project that is the subject of this EIR is a component of the WSIP; implementation of this Project would contribute to meeting overall WSIP goals and objectives. Specifically, the SFPUC has established a goal of offsetting 10 mgd of its local retail demand in San Francisco through a combination of conservation, recycled water, and groundwater projects as part of the WSIP. The proposed Project is included in that forecasted offset.

In 2007, Daly City, in coordination with the SFPUC, conducted a feasibility study (Daly City, 2007) to evaluate the provision of recycled water to Harding Park from the Daly City recycled water facility; the result of that feasibility study is the Project as described in this EIR.

The Project is part of the SFPUC's WSIP and would contribute to its goals of diversifying regional water supplies through the development of recycled water as an alternative water supply for non-potable uses. The specific objectives of the proposed Project include:

- Provide up to 0.39 mgd of recycled water to meet average daily demand for irrigating Harding Park;
- Diversify the SFPUC's water supplies for the San Francisco retail service area, consistent with WSIP requirements to reduce retail customer demand;
- Develop a new water supply that is both reliable and drought-resistant; and
- Reduce the use of potable water for irrigation and other non-potable uses by supplying those demands with recycled water.

Daly City is partnering with the SFPUC to promote full and productive use of its recycled water facility for recycled water production, enabling the SFPUC to meet the above objectives for the

benefit of the San Francisco retail service area. As such, Daly City serves as the lead agency for the preparation of this EIR, and the SFPUC is a responsible agency. Subject to environmental review and consideration by each party, Daly City and the SFPUC will enter into an agreement to identify the roles and responsibilities of Project construction and implementation.

2.3 Project Components

2.3.1 Recycled Water Demand

To determine the type and size of distribution facilities needed for the proposed Project, existing and future recycled water demands were developed as described below.

Existing Recycled Water Demand Served by the Recycled Water Facility

Existing recycled water demand was estimated by analyzing data from one complete irrigation season during 2006 (Daly City, 2007). Data from 2006 showed that the average daily supply for the entire year for all of the existing recycled water users (Olympic Club, San Francisco Golf Club, Lake Merced Golf Club, and existing Daly City municipal uses [e.g. irrigating area parks and medians]) was 0.44 mgd. The average daily supply during the irrigation season (May to October) was 0.89 mgd, the average daily supply during the peak week (seven consecutive days with the highest recycled water demands) was 1.62 mgd, and the peak daily supply was 2.54 mgd (**Table 2-1**). In June 2007 the peak daily supply reached 2.7 mgd.

TABLE 2-1
SUMMARY OF EXISTING RECYCLED WATER SUPPLIED IN 2006 FROM THE DALY CITY RECYCLED WATER TREATMENT FACILITY

Distribution Point	Average Daily Supply Entire Year (million gallons per day)	Average Daily Supply Irrigation Season[a] (million gallons per day)	Daily Supply Peak Week[b] (million gallons per day)	Peak Daily Supply (million gallons per day)
Olympic Club	0.25	0.50	1.00	1.72
San Francisco Golf Club	0.10	0.21	0.39	0.61
Lake Merced Golf Club	0.08	0.16	0.30	0.75
Existing Municipal Uses[c]	0.01	0.02	0.07	0.20
TOTAL RECYCLED WATER SUPPLIED	**0.44**	**0.89**	**1.62**	**2.54**

[a] The irrigation season is generally from May 1 to October 31.
[b] Seven consecutive days with the highest recycled water
[c] Existing municipal uses are existing irrigation of municipal medians and parks with recycled water by Daly City.

SOURCE: (Daly City, 2007)

Anticipated Demand to be Served by the Proposed Project

The *Harding Park Recycled Water Feasibility Study* (Daly City, 2007) assessed Harding Park's current irrigation demand patterns (average and peak supply requirements) and improvements needed to receive water from the Daly City recycled water system. Harding Park is smaller than the Olympic Club but larger than both the Lake Merced Golf Club and the San Francisco Golf Club, so Harding Park's average daily use in an irrigation season would be expected to be between 0.21 and 0.50 mgd. The San Francisco Recreation and Park Department, which currently operates the irrigation system at Harding Park, reported that the average daily demand during an irrigation season was 0.39 mgd and the peak daily demand was 0.69 mgd. Based on the peak daily values for the other three golf clubs, Harding Park would be expected to have a peak daily demand approximately two times as large as the number reported by the San Francisco Recreation and Park Department. For this reason, the average daily supply for a peak week and the peak daily demand was estimated by applying the average peaking factor for the three golf courses currently being served by Daly City, predicting that Harding Park would have an average daily supply irrigation season demand of 0.39 mgd, an average daily supply during a peak week of 0.78 mgd, and a peak daily supply of 1.37 mgd.

Table 2-2 summarizes existing and future recycled water demands to be met by the Daly City recycled water facility. The sum of average daily demand requirements in a peak week for the four golf course customers plus existing and future municipal uses is estimated to be 2.63 mgd, which is within the 2.77 mgd permitted production capacity of the recycled water facility. Therefore, there is sufficient production capacity to meet the needs of the golf courses and other anticipated Daly City uses during a peak week, and no additional capacity improvements (other than programming modifications to the distribution system) would be required for the treatment facility.

TABLE 2-2
SUMMARY OF EXISTING AND FUTURE RECYCLED WATER DEMAND OF THE DALY CITY RECYCLED WATER FACILITY

Distribution Point	Average Daily Demand Irrigation Season (million gallons per day)	Average Daily Demand Peak Week (million gallons per day)	Peak Daily Demand (million gallons per day)
Olympic Club	0.50	1.00	1.72
San Francisco Golf Club	0.21	0.39	0.61
Lake Merced Golf Club	0.16	0.30	0.75
Existing Municipal Uses[a]	0.02	0.07	0.20
Future Municipal Uses[b]	0.02	0.07	0.20
Future Internal Source Municipal Uses[c]	0.02	0.02	0.02
Harding Park Golf Club	0.39	0.78	1.37
TOTAL DEMAND	**1.32**	**2.63**	**4.87**

a Existing municipal uses are existing irrigation of municipal medians and parks with recycled water by Daly City.
b Future municipal uses are include the irrigation of Marchbank Baseball facility and the center median of Junipero Serra Boulevard in Daly City.
c Future internal source municipal uses are future projects that would use a constant amount of water throughout the year.

SOURCE: (Daly City, 2007)

Peak daily demands would be met by pumping from Daly City to the proposed underground storage tank, according to a pumping schedule. Peak hour demands of up to 2,000 gallons per minute (gpm) can be met by the proposed irrigation pump station. According to the golf club superintendents, the irrigation demands are affected not only by the weather, but also by the golf course schedule and irrigation requirements for special events. Therefore, it is unlikely that the peak day demands for all four golf courses would occur on the same day.

In the future, Daly City plans to add a new booster pump station along the Lake Merced line to supply recycled water to the center median of the Daly City portion of Junipero Serra and to Marchbank Baseball Facility, located on Junipero Serra Boulevard in Daly City. Daly City has also identified potential future non-municipal uses for a portion of the recycled water. The uses include internal source water for an office building that is part of the Phase III development of Pacific Plaza (Daly City, 2007). Planned internal source water uses include toilet flushing and cooling towers. Future anticipated demands include these projects, which are addressed in Chapter 5 of this EIR (Cumulative Impacts). These project demands were taken into account when evaluating the available capacity for this Project; however, these demands are not part of the proposed Project and are subject to separate environmental review.

2.3.3 Project Components

Based on the demand assumptions described in the previous section, the proposed Project includes the following components, each of which is described below:

- Recycled Water Pipeline
- Recycled Water Storage Tank
- Harding Park Pump Station
- Irrigation System Controls
- Protective Netting

Recycled Water Pipeline

The proposed recycled water pipeline would be 4,224 feet (0.8 miles) long with approximately 400 feet of pipeline in Daly City and 3,824 feet of pipeline in San Francisco. The pipe would be made of ductile iron and have an inside diameter of 18 inches. The pipe will be wrapped in a purple polyethylene sleeve and wrapped with tape that identifies it as a recycled water pipe. The pipeline would also include various types of appurtenances, such as isolation valves, blow-off valves, air-release valves and vacuum valves to be located in underground vaults.

- *Isolation Valves*. Isolation valves would be installed at the connection to the existing recycled water pipeline on both Harding Park and Olympic Club branches. In addition, a motorized isolation valve would be installed adjacent to the underground storage tank at Harding Park.
- *Blow-Off Valves*. Blow-off assemblies enable operators to flush water from low portions of the pipe to remove sediment or to drain the pipe for maintenance. Blow-off assemblies would be located at low points in the pipeline. The blow-off water would need to be

drained to a landscape area or to the sanitary sewer with an airgap, per stormwater and recycled water regulations

- *Air-Release Valves and Vacuum Valves.* Air-release and vacuum valves allow air to vacate from high points in the pipeline and allow air to enter the pipe when drained or after a pump failure caused by a utility power outage. Air-release valves would be installed at all high points and at a maximum interval of 2,500 feet (or approximately equal to the mid-point of the pipeline).

Proposed Alignment

The proposed alignment for the recycled water pipeline is shown in **Figures 2-3a** through **2-3j**. It begins in Daly City underneath Lake Merced Boulevard at the existing 16-inch pipeline that conveys recycled water from the recycled water facilities to the Olympic Club storage tank. This point of connection would be approximately 350 feet south of the median at the intersection of Lake Merced Boulevard and John Muir Drive. For this segment of the alignment, the pipeline would be located under the eastern side of the Lake Merced Boulevard. At the intersection, the pipeline crosses into the jurisdiction of City and County of San Francisco and runs for approximately 650 feet before crossing to the western side of Lake Merced Boulevard. The next segment runs approximately 1,400 feet along the western side of Lake Merced Boulevard before it crosses back to the eastern side again. From the eastern side it runs another 1,200 feet before crossing back to the western side of Lake Merced Boulevard for the last time. From here, the alignment continues for another 1,100 feet before entering the Harding Park maintenance yard.[3]

Air Gap Systems at Cross-Connections

Cross-connection control protects public health by preventing connections between recycled water piping, sewage piping, and domestic water piping. An air-gap is a point of separation between potable supplies and nonpotable water supplies and is designed to prevent contamination of potable supplies. Where the recycled waterline parallels existing potable waterlines, the recycled waterline is required to be installed a minimum of 10 feet horizontally from the existing waterline. Cross-connection control measures would be implemented along the recycled water pipeline prior to the conversion to recycled water. Cross-connection control would include:

- Proper initial design of recycled water facilities including backflow prevention devices and isolation devices as detailed in the District Recycled Water Program's Rules and Regulations, to maintain intended system functions and safeguard public health.

- Identification of underground and aboveground piping and facilities carrying recycled water to prevent improper cross connections with potable water piping. This includes signage and purple markings as required by applicable recycled water regulations.

- Periodic inspection of components by certified cross connection control specialists including inspections of backflow prevention devices and system testing of domestic, fire, and recycled water systems.

[3] 4,700 feet is the length of the entire pipeline with all of the bends, crossings, etc. The actual pipeline route (as the 'crow flies' along Lake Merced Boulevard) is approximately 4224 feet.

Recycled Water Storage Tank

The proposed site for the recycled water storage tank is at Lake Merced Boulevard at Higuera Avenue, under the paved parking lot that serves the Harding Park golf course maintenance building. The site is relatively flat, with grades gently sloping in the south/southwest direction. The ground is currently paved with asphalt. The proposed underground storage tank would be constructed with a capacity of 700,000 gallons with exterior dimensions of 100 feet long by 60 feet wide by approximately 23.5 to 28 feet deep. The storage tank top is sloped and includes a sump for the pump intakes.

The underground storage tank would be furnished with two outlets. The main outlet would be the pump intakes from the irrigation pump station and the secondary outlet would be an overflow outlet that drains to a sewer manhole in Higuera Drive. The overflow outlet would prevent internal pressure build-up within the concrete structure in the unlikely event of instrumentation or mechanical failure.

Harding Park Pump Station

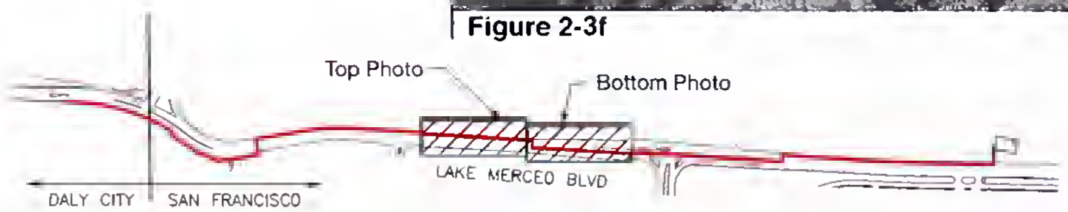
The proposed pump station would be sited in the northwest corner of the existing Harding Park maintenance yard (see Figure 2-2). The recycled water pump station dimensions would meet the minimum footprint required by the Americans with Disabilities Act (ADA), which is 24 feet by 19 feet. The total building height would be 16 feet, which would include a 4-foot high parapet wall along the four roof edges. The parapet wall would be required per SFPUC safety guidelines for roof structures that would be accessed during routine pump maintenance. The pump station would be a simple rectangular building constructed of concrete masonry units (CMU) with a recycled material content between 10 – 20 percent; the CMUs will be interspersed with glass blocks aligned to spell-out "H_2O", the molecular formula for water.

Pumps, discharge piping, valves, starters, and controls would be furnished as an integrated skid mounted system by a specialized irrigation pump station supply firm. The integrated skid mounted system refers to the pump skid that pumps recycled water from the tank to the irrigation system. The skid would be engineered specifically for Harding Park with all of the local controls, electrical wiring, and pipe headers already connected. The discharge pipe and local power feed will need to be connected on site; the internal wiring and programming will be done at the factory. The pump station would have two duty pumps and one standby pump of equal capacity. Therefore, the pump station design would allow for the Harding Park irrigation demands to be met with one pump out of service.

Attached to the southeast corner of the pump station building will be a radio antenna to facilitate communications between the Harding Park Pump Station and a) the District's Supervisory Control and Data Acquisition (SCADA) system, b) the SFPUC's Lake Merced Pump Station, and c) the adjacent maintenance yard building. This feature would allow staff to monitor water level information via radio communications. When attached to the roof of the pump station, the height of the radio antenna pole will depend on the strength of the signal, but is not anticipated to exceed 20 feet (if radio signal testing shows that this height is adequate).

Figure 2-3e

Figure 2-3f



SOURCE: Carollo and ESA

Harding Park Recycled Water EIR . 207704

Figure 2-3e and 2-3f
Proposed Recycled Water Pipeline

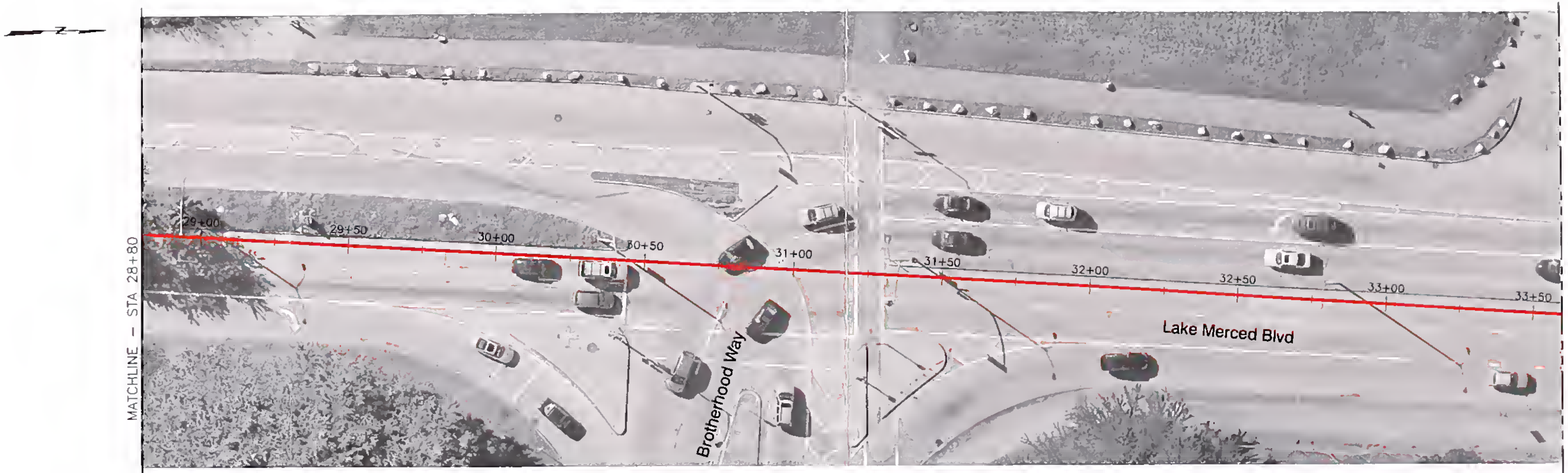


Figure 2-3g

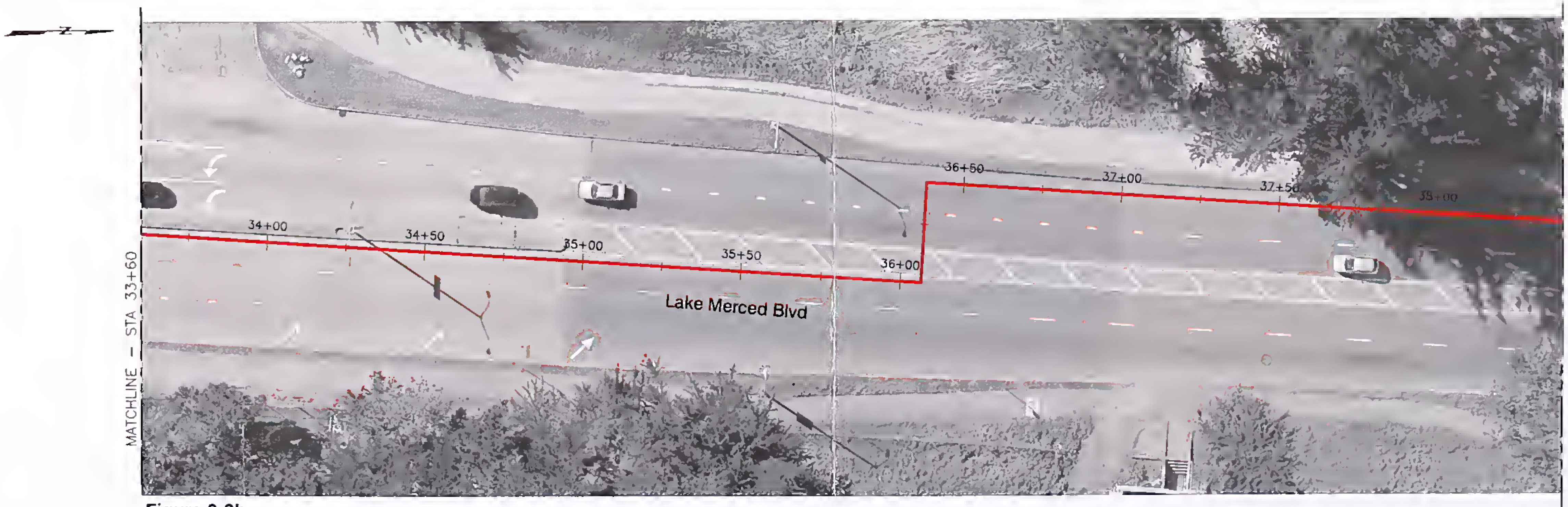
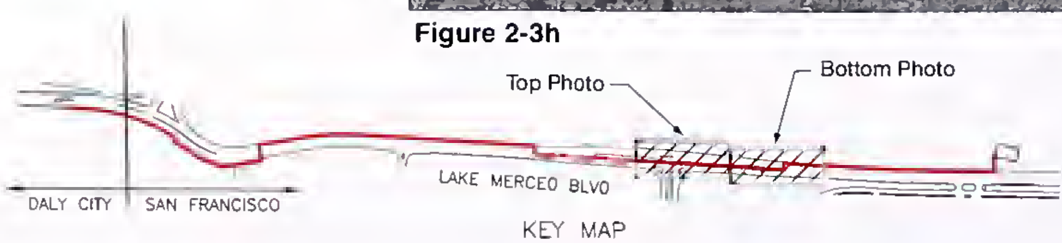


Figure 2-3h

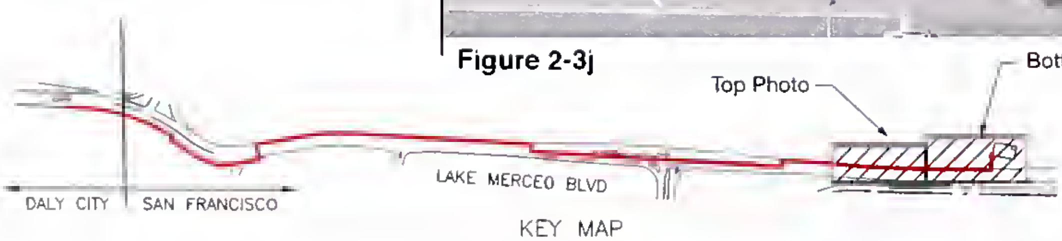


SOURCE: Carollo and ESA

Figure 2-3g and 2-3h
Proposed Recycled Water Pipeline

Figure 2-3i

Figure 2-3j



RCE: Carollo and ESA

Harding Park Recycled Water EIR . 207704

Figure 2-3i and 2-3j
Proposed Recycled Water Pipeline

Figure 2-3g

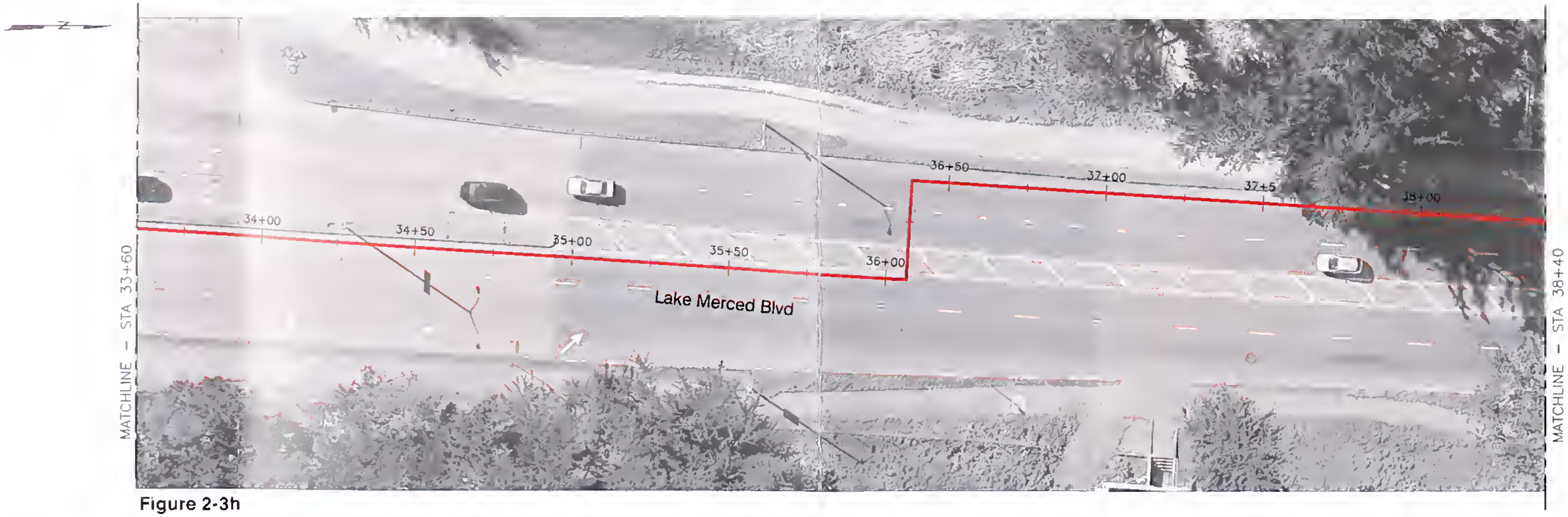
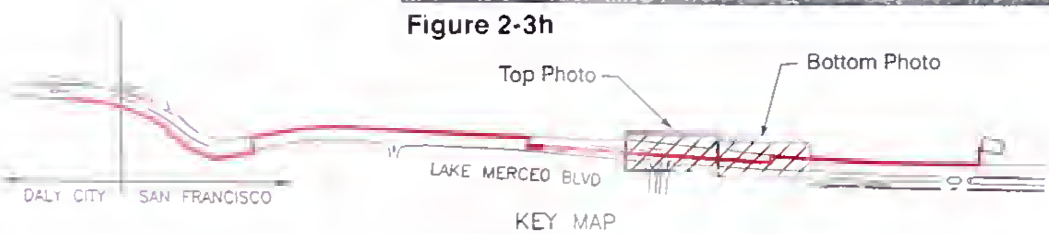


Figure 2-3h



SOURCE: Carollo and ESA

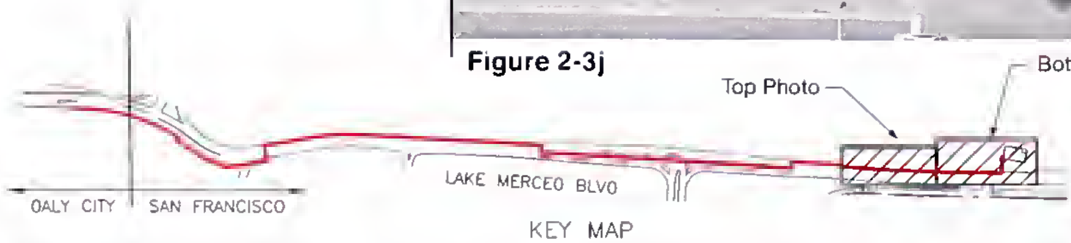
Harding Park Recycled Water EIR . 207704

Figure 2-3g and 2-3h

Proposed Recycled Water Pipeline

Figure 2-3i

Figure 2-3j



SOURCE: Carollo and ESA

Figure 2-3i and 2-3j
Proposed Recycled Water Pipeline

SOURCE: Carollo and ESA

Harding Park Recycled Water EIR . 207704

Figure 2-3k
Pump Station, Storage Tank, and Protective Netting

Irrigation System Controls

The proposed storage tank and pump station process monitoring and control system would consist of instrumentation and control devices designed for automatic control of the recycled water system. The facility would be supervised via the District's SCADA system located at the recycled water facility at the District's facilities in Daly City. Information and control commands would be relayed between the District facilities and the proposed pump station in Harding Park via radio. The system would be designed to fully integrate with the existing control systems at the District. In addition the control strategies for the recycled water pumps at the District's facilities would be revised to provide a fully automated recycled water distribution operation.

Protective Netting

Protective netting will be installed along the north side of the Harding Park maintenance parking lot. The purpose of the protective netting is to shield cars in the maintenance yard parking lot from damage by errant golf balls lobbed from a nearby tee. Currently, the parking lot is protected from errant golf balls by existing mature trees; however, some of the trees offering protection will be removed to facilitate Project construction, and replaced post-construction with new trees. Once the replacement trees mature (in approximately 10-15 years), the protective netting can be removed. The protective netting will be approximately 100 feet in length and extend 30 feet above ground. It will be attached to metal or wood poles approximately 30 feet tall. The proposed netting is 1-inch polyester mesh, which is similar to netting found at golf driving ranges.

2.4 Project Construction

2.4.1 Construction Activities

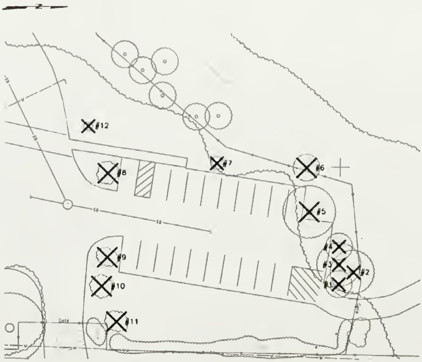
Site Clearing and Preparation

Site clearing and preparation of temporary construction staging areas for all Project components would occur before construction mobilization, including vegetation and debris removal and grading of work areas where necessary to provide a relatively level surface for the movement of construction equipment. There are trees and vegetation in the vicinity of the proposed pump station that may need to be removed prior to construction (**Figure 2-4**) and a proposed vegetation and tree replacement plan has been developed (**Figure 2-5**). Impacts related to tree removal are discussed in Section 3.3, Aesthetics and Section 3.10, Biological Resources. Construction staging areas may require placement of gravel, but no grading will take place. The staging area adjacent to the Vista Grande Canal will be enclosed by a green 8-foot high visual screening fence. This fence will screen the staging area from the adjacent Olympic Club and John Muir Drive and have separate entrance and exit points for construction vehicles.


View West from Lake Merced Blvd


View West from Inside Gate


View South from Point North of Site



Tree Removal Plan

Note: Tree #6 was removed already due to a hazard.

☒ EXISTING TREE TO BE REMOVED

#1	CUPRESSUS MACROCARPA	17" (DEAD)
#2	CUPRESSUS MACROCARPA	20" (DEAD)
#3	CUPRESSUS MACROCARPA	14" (DEAD)
#4	CUPRESSUS MACROCARPA	16.6" (DEAD)
#5	CUPRESSUS MACROCARPA	26.25"
#6	CUPRESSUS MACROCARPA	30.5" (DEAD)
#7	QUERCUS AGRIFOLIA	3.7"
#8	ARBUTUS "MARINA"	4.65"
#9	ARBUTUS "MARINA"	4"
#10	ARBUTUS "MARINA"	4.3"
#11	ARBUTUS "MARINA"	4.3"
#12	OAK	3.75"

SOURCE: City and County of San Francisco Department of Public Works Bureau of Architecture, 2009

Figure 2-4
Pre-Construction Tree Removal Plan

PLANT PALETTE

Key	Botanical Name	Common Name	Size
	Objectives		
	1 Replace planting that will be damaged during the proposed construction		
	2. Screen the ex. parking lot from Lake Merced Blvd & adjacent Golf Course		
	3 Choose drought tolerant plants to respond the project water conservation goal		
	4 Enhance the visual quality with plantings of dramatic form, color and seasonal changes		
	Trees		
	Cupressus macrocarpa	Monterey Cypress	24" Box
	Arbutus x Marina	Strawberry Tree	24" Box
	Cotinus coggygria 'Pink Champagne	Smoke Bush	15 Gal
	Cercis occidentalis	Western Redbud	15 Gal
	Quercus agrifolia	Coast Live Oak	15 Gal
	Shrubs		
	Arctostaphylos densiflora 'Howard McMinn'	Vine Hill Manzanita	5 Gal
	Ceanothus 'Concha'	Mountain Lilac	5 Gal
	Chaenomeles 'Coral Sea'	Flowering Quince	5 Gal
	Rhamnus californica 'Mound San Bruno'	Coffeberry	5 Gal
	Ribes sanguineum glutinosum	Pink Winter Currant	5 Gal
	Grasses & Perennial		
	Carex pansa	California meadow sedge	plug
	Eriogonum fasciculatum	California buckwheat	1 Gal
	Festuca idahoensis 'Siskiyou Blue'	Siskiyou Blue Idaho Fescue	Flat
	Iris douglasiana	Iris	1 Gal
	Juncus patens	California Gray Rush	plug
	Muhlenbergia capillaris 'Regal Mist'	Pink Muhly	1 Gal
	Muhlenbergia rigens	Deer Grass	1 Gal
	Succulent		
	Agave americana 'Variegata'	Yellow Striped Centry Plant	15 Gal
	Agave franzinii	NCN	15 Gal
	Aloe saponaria	Soap Aloe	1 Gal
	Vines and Groundcovers		
	Fragaria chiloensis	Beach Strawberry	1 Gal
	Ceanothus griseus h. 'Yankee Point'	Ceanothus	1 Gal
	Rhamnus californica 'Sea View'	Coffeberry	5 Gal
	Salvia x Bee's Bliss	Bee's Bliss Sage	1 Gal
	Coastal Meadow (to be reseeded, seed mix available through Pacific Coast Seed)		
	Native Ornamental Fine Fescue mix 70 lbs/Acre		
	Festuca rubra "Molate blue" 30#/ac		
	Festuca occidentalis 20#/ac		
	Festuca idahoensis 20#/ac		
	Mostly Perennial Wildflowers 2 lbs/Acre		
	Achillea millefolium Eschscholzia californica, Lupinus nanus, Sisyrinchium bellum		
	Coreopsis lanceolata Hesperis matronalis Linaria reticulata Linum lewisii		

SOURCE: City and County of San Francisco Department of Public Works Bureau of Architecture, 2009

Harding Park Recycled Water EIR . 207704

Figure 2-5
Post-Construction Landscaping
and Tree Replacement Plan

Pipeline Installation

Contractors would install the Harding Park recycled water pipeline using conventional, open trench construction methods. The construction sequence would include removing asphalt, excavating the trench, preparing and installing the pipeline, installing appurtenances, backfilling the trench, and revegetating or re-paving the area, as appropriate. Pipeline installation would be a continuous operation along the pipeline alignment, with crews installing the pipeline as other crews are simultaneously excavating and preparing the trench ahead of the installers. Additional crews would be backfilling the trench and restoring the area behind the installation crew. The recycled pipeline will be installed a minimum of 10 feet horizontally from any existing potable water pipelines to comply with Title 22 (*California Code of Regulations Waterworks Standards*). If the recycled water pipeline crosses a potable water pipeline, the crossings would be constructed at no less than 45 degrees to the pipeline and the recycled water pipeline would cross at least one foot below the potable pipe. In addition, no connection joints would be made in the recycled water pipeline within eight feet of the potable pipeline.

The proposed alignment would be within the Lake Merced Boulevard right-of-way, generally about five feet from the edge of the curb. The trench would be approximately 32-40 inches wide for most of its length. The trench depth would be a minimum of 4.5 feet below the ground surface (bgs) and a maximum of 10 feet; there would be at least 3 feet of cover over the pipe. If the minimum cover cannot be met due to utility conflicts, the pipe would be protected by a concrete cap or another form of pipe protection. A conventional backhoe or other mechanized equipment would excavate the trenches. Trench boxes, shoring, or laying back and benching of the slopes would stabilize the pipeline trench and prevent the walls from collapsing during construction. Open trench construction would proceed at a rate of about 100 to 300 feet per day.

After excavating the trench, the contractor would line the trench bottom with a bed of sand that would be shaped to support the pipeline. Installers would then place the pipeline in the trench, backfill the trench with excavated material, and compact it. The pipes would be protected by polyethylene wrap. Because the pipe is ductile iron pipe with restrained joints, pipe would be cut prior to delivery to site and welding would not be required. Air valve vaults would be required.

Dewatering Discharges

It is not anticipated that groundwater would be encountered during the excavation for the proposed storage tank. The groundwater table is estimated to be no higher than 30 feet below ground level at the proposed storage tank location and is below the maximum limits of excavation, which is estimated to be at 28 feet. Therefore, only two types of dewatering discharges may be necessary during Project construction: (1) the new pipeline would be disinfected with potable water prior to use, and disposal of this water would be required; and (2) some dewatering may be required during trenching on Lake Merced Boulevard to the north of John Muir Drive. In both cases, contractors would treat the dewatering effluent, if necessary, before discharging it to the San Francisco combined sewer system, which is treated at the SFPUC's Oceanside Treatment Plant. In accordance with National Pollutant Discharge Elimination System (NPDES) requirements and the San Francisco Department of Public Works

San Francisco industrial discharge permit requirements, the groundwater may need to be treated to meet pH, sulfides requirements and any other requirements specified in the permit, prior to discharge to the combined sewer system.

Groundwater or surface water encountered in the trench during excavation would be pumped from the excavated area and discharged to the nearest sewer intake, if located in San Francisco. If the water cannot be discharged to a wastewater treatment facility, the contractor would treat the water (for turbidity or other constituents), if necessary, before discharge in accordance with NPDES requirements.

To connect to the existing recycled water and potable water systems, system operators would need to isolate (valve off), shut down, and dewater (drain) the isolated portions of existing pipelines, dechlorinate and adjust the pH of the treated water being drained from the pipes, and then discharge it to the combined sewer system. Upon completion of construction of the pipeline, the contractor will disinfect pipelines and connections (e.g. air gap systems), pumping chlorinated water through the system before bringing the pipelines into service. The chlorinated water would be similarly treated (dechlorinated and adjusted for pH) prior to discharge. The startup process for bringing the new pipeline on line (cleaning the pipeline, hydrostatic testing of pipes, disinfecting the potable water pipes, and dechlorinating the disinfected water) would take up to 7 days.

Site Cleanup and Restoration

After construction activities are completed, the construction contractor would restore disturbed areas to their preconstruction condition. Restoration measures include reestablishing preconstruction contours and drainage patterns and installing permanent erosion and sedimentation controls to minimize post-construction erosion. Replacement trees, shrubs and plants will be planted in/around the maintenance yard. There will be a "construction quiet period" (up to 60 days) observed prior to the October 2010 Charles Schwab Golf Tournament. During that time, construction equipment and stored materials will be removed and the site will be graded.

Traffic Control

The contractor will be required to prepare and implement a construction traffic management plan. A detailed description of truck trips anticipated to be generated during construction and impacts to traffic and transportation is provided in Section 3.5, Transportation and Traffic.

2.4.2 Spoils Management and Disposal

Excess soil (called spoils) would be generated as part of excavation and construction activities. The total estimated volume of excavated soil generated during construction activities would be approximately 5,800 cubic yards. Strategies for managing excavated material generated during Project construction activities would include: (a) backfilling the pipeline trench with excavated soil, if possible; or (b) hauling the spoils offsite to an appropriate landfill, which will be determined by the contractor, but could include Ox Mountain, Redwood, or Vasco landfills, all of which have the capacity to accept spoils.

The proposed Project will incorporate facility design and construction methods that produce less waste or that produce waste that could more readily be recycled or reused. In addition, construction specifications will describe plans for recovering, reusing, and recycling wastes produced through construction, demolition, and excavation activities.

2.4.3 Construction Staging and Access

Site Access

Construction would take place along the length of the proposed recycled water pipeline underneath Lake Merced Boulevard for a distance of 4,224 feet (0.8 miles). The standard construction corridor for the recycled water pipeline would be 32 feet; the minimum acceptable for construction is 20 feet. Construction would also occur in the Harding Park maintenance yard staff parking lot. The Harding Park maintenance yard would remain accessible to the San Francisco Recreation and Park Department staff throughout the construction period for operations and maintenance activities including accepting large truck deliveries, although coordination with construction crews may be required. However, onsite staff parking will be unavailable during construction. Staff parking will be temporarily relocated to the Harding Park Clubhouse (see Figure 2-2).

Staging Areas

Due to space constraints and the need by San Francisco Recreation and Park staff to use the Harding Park maintenance yard, off-site construction staging areas are proposed (see Figure 2-2). Staging areas would be required for equipment storage, construction machinery, deliveries, and the SFPUC/Construction Management Bureau and the contractor's construction trailers. The contractor will provide temporary site utilities (telecom, water, power, potable toilets) to the staging areas construction trailers. There would be temporary fencing around the contractor's construction staging area near John Muir Drive and temporary security lighting for 12 to 16 months. **Table 2-3** summarizes the locations and uses of the proposed construction staging areas.

2.4.4 Construction Equipment and Workforce

Table 2-4 summarizes construction activities and workforce associated with each Project component. As shown in the table, the equipment needed for soil excavation and placement of the new pipeline would typically include backhoes, excavators, loaders, dump trucks, trucks, compaction equipment, sheet pile driver and vibrators. Pavers and rollers would be used to restore the roadways.

2.4.5 Construction Schedule

Table 2-4 also shows the preliminary construction schedule for the various Project components. Construction is expected to begin in March/April 2010 and be completed by August 2011 (approximately 12-16 months). No construction activities will take place at or in the vicinity of Harding Park during the designated quiet period (up to 60 days) surrounding the October 2010 Charles Schwab Golf Tournament. Construction activities are anticipated to occur from 8:00 a.m. to 5:00 p.m. (Monday-Friday) when construction is taking place in Daly City, and 7:00 a.m. to

TABLE 2-3
PROPOSED CONSTRUCTION STAGING AREAS

Staging Area	Location	Temporary Facilities / Uses	Approximate Space Available (square feet)
Vidal Drive	Vidal Drive runs parallel to Lake Merced Boulevard, across from the Harding Park maintenance yard. The staging area would consist of approximately 80 feet of the southbound parking lane of Vidal Drive and an area of approximately 5 feet in width by 80 feet in length in the greenbelt between Vidal Drive and Lake Merced Boulevard, adjacent to the southbound parking lane.	Location for temporary trailer (8 feet wide x 40 feet long) for SFPUC Construction Management staff.	400
Undeveloped area near Vista Grande Canal	Grassy parcel on the west side of John Muir Drive, adjacent to the Vista Grande Canal. The staging area will be located on the portion of the site that is owned by SFPUC. A visual screening fence would be required to prevent theft and to minimize visual impacts to Olympic Club golfers.	Material stockpiling (e.g. pipes and rebar), vehicle and equipment storage; and location of contractor's construction trailer.	22,500

5:00 p.m. when construction takes place in San Francisco, as described by the noise regulations for each city in Section 3.6, Noise of this EIR. Construction may occasionally occur in the evenings and on Saturdays in San Francisco for the pump station and storage tank only, in compliance with the San Francisco municipal code.

2.5 Operations and Maintenance

2.5.1 System Operations

This section describes the system operations of the proposed pipeline, pump station and storage tank. Based on recycled water system modeling prepared by project engineers, it was determined that Harding Park could share the Olympic Club's recycled water supply pump and pipeline currently dedicated to the Olympic Club without affecting water deliveries to the Olympic Club or any of the other existing recycled water customers (Daly City, 2007). System operations would alternately pump flows between the two storage tanks at the respective golf courses. This modeling also established the required diameter for the recycled water pipeline extending to Harding Park (i.e., 18 inches in diameter) as well as the size of the proposed storage tank (700,000 gallons).

Irrigation System Supply Pumps and Controls at Harding Park

Harding Park is currently irrigated between 8:00 p.m. and 4:00 a.m. This schedule may be altered depending on the availability of recycled water to the District's current customers, the Olympic Club, the San Francisco Golf Club, the Lake Merced Golf Club, and Daly City. The golf course uses flow management software to calculate an average demand of 1,500 gpm over the duration

TABLE 2-4
SUMMARY OF CONSTRUCTION ACTIVITIES

Project Component	Proposed Site Activities	Excavation / Backfill (cubic yards)	Construction Equipment	Construction Crew	Site Access / Expected Lane Closures	Construction Schedule / Duration
Harding Park Recycled Water Pipeline	Trench excavation; Dewatering of groundwater in some portions of the pipeline; Trench Preparation; Pipe installation; Backfilling; air/vac valve vault installation; Disinfect pipeline before bringing online; Soil compaction; Vegetation plantings, resurfacing, and repaving, as appropriate.	7,500 / 7,200	• Flatbed truck to haul in backhoe and excavators • Backhoe • Excavators • Haul trucks for excavated material • Trucks for materials delivery • Compaction equipment • Pavers and rollers • Baker tank / water pump • Pickup trucks • Moveable trench shoring	10	Lane closures would be required during construction of pipeline. Closures of lanes would vary based on pipeline route.	3 to 4 months
Underground Storage Tank	Installation of temporary exclusion fencing; Temporary sheet pile installation; Excavation: Concrete formwork for tank, concrete pumping for tank slabs, wall, and roof; install sewer main across Lake Merced Blvd; connect pipelines to tank; stripe tank roof for parking; misc paving and grading; landscaping; fence replacement; possible welding on steel reinforcement for storage tank.	8,500 / 3,000 (includes pump station installation)	• Sheet pile driver • Flatbed truck • Excavator • Backhoe • Concrete pump truck • Air compressor • Generator • Dump trucks • Pickup trucks • Concrete trucks • Crawler crane	10-30 (10 during excavation; 30 during construction)	Maintenance yard access would be maintained during construction. Flaggers may be required to allow for truck access to site from Lake Merced Blvd. Some lane closures would occur during installation of new sewer pipe.	8 months
Harding Park Pump Station	Install pump skid; connect to electrical system in maintenance building; construct Concrete Masonry Unit (CMU) building; install roof; pump station testing	Combined with storage tank	• Excavator • Backhoe • Air compressor • Dump trucks	10-20	Maintenance yard access would be maintained during construction. Flaggers may be required to allow for truck access to site from Lake Merced Blvd.	4 months

TABLE 2-4 (Continued)
SUMMARY OF CONSTRUCTION ACTIVITIES

Project Component	Proposed Site Activities	Excavation / Backfill (cubic yards)	Construction Equipment	Construction Crew	Site Access / Expected Lane Closures	Construction Schedule / Duration
Protective Netting at Harding Park Maintenance Yard	Pit preparation for poles; pole installation; backfilling; soil compaction; net attachment; vegetation, plantings, resurfacing, and repaving as appropriate	8	• Auger truck • Backhoe • Dump trucks for soils disposal • Trucks for materials delivery	3-5	Site access will be maintained during construction. Flaggers may be required to allow for truck access to site from Lake Merced Blvd.	2-3 weeks
Radio Pole	Attach radio antenna pole to the pump station building	0	• Trucks for materials delivery	1-2	Site access will be maintained during construction. Flaggers may be required to allow for truck access to site from Lake Merced Blvd.	1 week
Yard Piping	Trench Preparation; Pipe installation; Backfilling; connect potable water backup	Combined with storage tank	• Excavator • Backhoe	10	Site access would be maintained during construction. Flaggers may be required to allow for truck access to site from Lake Merced Blvd.	4 months
Spoils Disposal	Excavated material testing; Haul soil; Soil compaction; Grading	5,800	• Backhoe • Dump trucks	10	Site access would be maintained during construction. Flaggers may be required to allow for truck access to site from Lake Merced Blvd.	4 months
Pipeline Flushing	Pipeline flushing, testing, and disinfection - included under pipeline installation	0	• Water truck (if necessary)	3-5	Site access will be maintained during construction. Flaggers may be required to allow for truck access to site from Lake Merced Blvd.	1 week
Dewatering Activities	Dewatering of groundwater some portions of the pipeline - included under pipeline installation	Combined with pipeline installation	• Trucks for materials delivery • Dewatering pump • Temporary pipe • Settling/Filler Box	1-2	Site access will be maintained during construction. Flaggers may be required to allow for truck access to site from Lake Merced Blvd.	1-3 months
Landscaping	Plant trees, shrubs and turf	10/0	• Trucks for materials delivery • Forklift	3-5	Site access will be maintained during construction. Flaggers may be required to allow for truck access to site from Lake Merced Blvd.	1 week

TABLE 2-4 (Continued)
SUMMARY OF CONSTRUCTION ACTIVITIES

Project Component	Proposed Site Activities	Excavation / Backfill (cubic yards)	Construction Equipment	Construction Crew	Site Access / Expected Lane Closures	Construction Schedule / Duration
Tree removal	Remove up to 11 trees	0/10	• Haul trucks • Crane • Chainsaw	3-5	Site access will be maintained during construction. Flaggers may be required to allow for truck access to site from Lake Merced Blvd.	1 week
Grading for ADA	Miscellaneous site grading for sidewalks	0	• Bobcat (small excavator)	1-2	Site access will be maintained during construction. Flaggers may be required to allow for truck access to site from Lake Merced Blvd.	1 week

of the 8-hour time period. The irrigation system requires a pressure of 95 pounds per square inch (psi). In addition to the pumps needed to supply irrigation water, a five-horsepower (hp) pressure maintenance pump ("jockey" pump) is also required to maintain pressure in the system during low flow periods. To maximize the efficiency of this design, a three-vertical canned turbine pump system including two duty pumps and one standby pump (all rated for 750 gpm at 95 psi) are proposed. For operational flexibility, two of the pumps would be equipped with variable frequency drives.

For a peak demand week, the recycled water distribution schedule shown in **Figure 2-6** is the recommended system operation based on information known at this time. For a peak week, this schedule shows that all users could receive peak week recycled water demand in time to begin irrigation by 8:00 p.m. and allows for the smallest fluctuation in volume at the equalization basin.

For an average day, the distribution schedule timing is not as critical because the irrigation demand is less. **Figure 2-7** presents a possible operating schedule. The Olympic Club is shown receiving water after Harding Park. The tank at the Olympic Club is not big enough to hold an average day's worth of recycled water. The Olympic Club tank begins filling closer to the start of irrigation to allow for simultaneous filling and draining so that the tank does not reach capacity before the irrigation need is met.

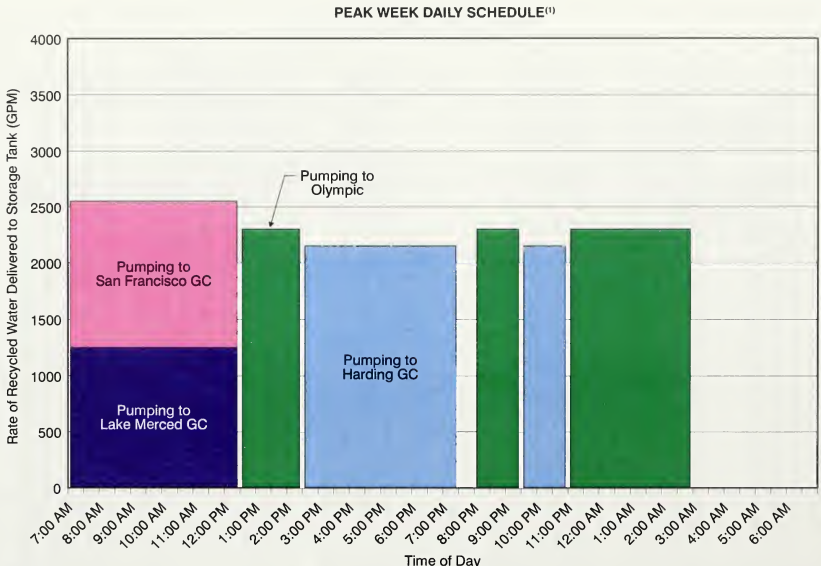
Irrigation System Controls

Back-up Connection to Potable Supply at Harding Park

The existing irrigation system connection to the SFPUC's retail water distribution system would be left in place, but would be disconnected just downstream of the existing backflow preventer. The existing double check valve backflow preventer will be replaced with a Reduced Pressure Principle Backflow Assembly.

A new water pipeline would be installed to bring potable water from the new Reduced Pressure Principle Backflow Assembly to the new storage tank as a backup water supply in the event of a failure or temporary disruption of recycled water supply. This potable water line would be protected from cross-connection by an air gap. Where the recycled water line parallels existing potable water lines, the recycled waterline would be installed a minimum of 10 feet horizontally from the existing waterline. The irrigation pump station would pump out from a suction pipe from the bottom of the storage tank. The irrigation pump station discharge header would connect to the existing golf course irrigation system west of the existing backflow preventer.

If the storage capacity in the proposed storage tank is not sufficient to meet the demand in the event that the recycled water system is down, the recycled water supply can be augmented with potable water to meet the Harding Park's irrigation water demand. The recycled water and potable water supply lines would be equipped with motorized valves to allow for filling of the storage tank should there be a temporary disruption in the recycled water system.



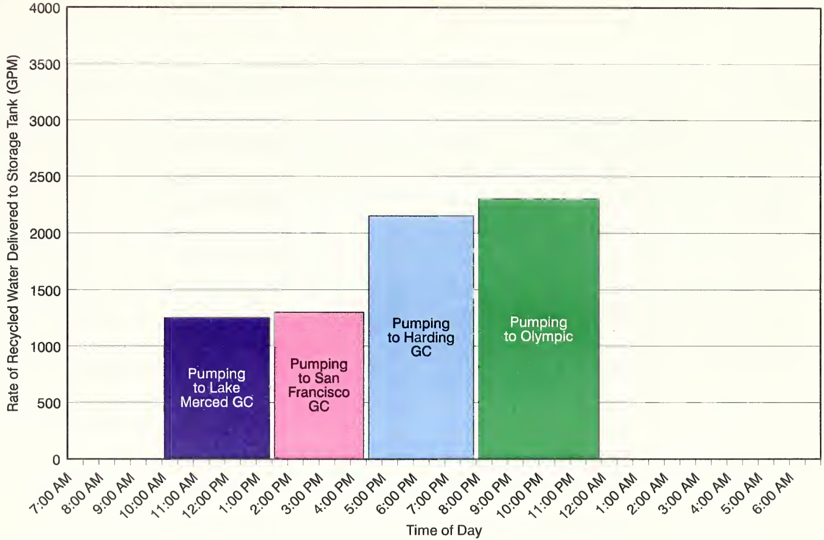
NOTES:

(1) Assumes 8:00 pm to 4:00 am irrigation schedule.

SOURCE: Carollo, 2007

Figure 2-6
Recommended Recycled Water Distribution
Peak Week Daily Schedule

AVERAGE DAY DAILY SCHEDULE[1]



NOTES:

(1) Assumes 8:00 pm to 4:00 am irrigation schedule.

SOURCE: Carollo, 2007

Harding Park Recycled Water EIR . 207704

Figure 2-7
Recycled Water Distribution
Average Day Daily Schedule

Maintenance

Recycled Water Pipeline

Routine maintenance for the pipeline would involve maintenance of the air/vacuum valves and inspections to check for visual signs of leaks. If a leak in the pipeline were to occur, a SFPUC crew would be dispatched to find and seal the leak (expected to take one to two days). A drop in flow or pressure would indicate a potential problem.

Pump Station

Routine maintenance for the pump station would include inspections of the equipment and replacement of miscellaneous equipment such as pump seals. The electrical and control system would be monitored. It is anticipated that the pump station will be checked at least once per week. In the event that pumps need to be removed from the facility for repair or maintenance, an open-hatch skylight will provide full access. If there is a security breach at the pump station, an alarm will notify staff. The security system at the pump station will be fully integrated with the SFPUC's system.

Storage Tank

The storage tank may be cleaned at 5 to 10 year intervals. Cleaning would require confined space entry procedures. Any sediment in the tank would be pumped out and taken to a landfill.

2.6 Required Permits and Approvals

This EIR provides the information and environmental analysis necessary to assist the public agency decision-makers in considering the approvals necessary for the planning, development, construction, operations and maintenance of the proposed Project. Daly City is the lead agency for the proposed Project under the California Environmental Quality Act (CEQA). As lead agency, Daly City is responsible for reviewing and certifying the adequacy of this EIR and is responsible for taking certain required permit and approval actions on the Project (CEQA Guidelines, Section 15367).

Permits and authorizations that would need to be obtained from federal, state and local agencies to be in compliance with relevant laws and regulations are outlined below. Currently, there are no federal permits required for this Project and no federal funds have been allocated to the Project. In the future, should federal funding for this Project be available, federal approvals may be required. The relevant agencies, permits, and authorizations may include the following:

Federal (in the event that federal funding is obtained)

- State Historic Preservation Office Section 106 of the National Historic Preservation Act (NHPA). Compliance and documentation required if it is determined the proposed Project will affect cultural resources potentially eligible for the National Register of Historic Places.
- Federal General Conformity Rule for the Clean Air Act (CAA). A CAA general conformity analysis applies only to projects in a nonattainment area or an attainment

area subject to a maintenance plan and is required for each criteria pollutant for which an area has been designated nonattainment or maintenance.

State

- Amendment to existing Daly City NPDES permit to add Harding Park as a "use" site; reviewed and approved by CDPH with final approval in the form of an amendment by the San Francisco Bay Regional Water Quality Control Board (RWQCB).
- State Water Resources Control Board (SWRCB) Section 401 Water Quality Certification (or waiver). Required as a Section 404 Clean Water Act Permit is required from the U.S. Army Corps of Engineers (Corps).
- SWRCB Storm Water Pollution Prevention Plan (SWPPP). Required for General Permit for Discharge of Stormwater Associated with Construction Activities.
- Coastal Development Permit for portions of the project that are in San Francisco.

Regional/Local

- SFPUC approval of Project action(s).
- Agreement between Daly City and the SFPUC to implement the Project.
- RWQCB Section 402 Clean Water Act NPDES permit. Combined with Industrial Discharge Permit. Required for discharging groundwater removed from construction activities.
- City of Daly City encroachment permit.
- Connection tap into existing recycled water main from the City of Daly City Department of Water and Wastewater Resources.
- Bay Area Air Quality Management District Permit.

Applicable Codes and Regulations

Proposed design and construction will follow applicable federal, state and local codes and regulations governing distribution and application of recycled water. A list of these codes and regulations include:

"The Purple Book" California Code of Regulations Titles 22 and 17, CaDPH

Approved Backflow Prevention Assemblies for Service Isolation, CCR Title 17, CaDPH

SF Muni Code Article 22 Reclaimed Water Use, CCSF-PUC

Recycled Water Procedures for Developers, SFWater.org

Utility Design Criteria and Standards for Hunter's Point Shipyard, SFPUC Jan 2005

North San Mateo County Sanitation District *a subsidiary of the City of Daly City* (Program) Water Recycling Program Rules and Regulations for Recycled Water Customers Final July 28, 2004 or revised if available

SWRCB Recycled Water Policy:
http://www.swrcb.ca.gov/water_issues/programs/water_recycling_policy/docs/recycledwaterpolicy_approved.pdf

SWRCB General Waste Discharge Requirements for Landscape Irrigation Uses of Municipal Recycled Water:
http://www.swrcb.ca.gov/water_issues/programs/water_recycling_policy/landscape_irrigation_general_permit.shtml

References – Project Description

City of Daly City, San Francisco Public Utilities Commission, San Francisco Recreation and Park Department (Daly City/SFPUC/SF Recreation and Park), *Harding Park Recycled Water Feasibility Study*, 2007.

City of Daly City, San Francisco Public Utilities Commission, San Francisco Recreation and Park Department, *Preliminary Design Report, Harding Park Recycled Water Project*, May 2008.

Mitchell, Russell D., FAISC, Russell D. Mitchell & Associates, Inc., email communication, March 7, 2008 and February 26, 2009.

San Francisco Public Utilities Commission (SFPUC), *Lake Merced Water Level Restoration Alternatives Analysis Report*, January 2008.

San Francisco Public Utilities Commission (SFPUC), *Standard Measures to be Included in Construction Contracts and Project Implementation,* from Susan Leal, General Manager, and Tony Irons, Deputy General Manager, to Michael Carlin, Tom Franza, Barbara Hale, Harlan Kelly, Julie Labonte, Irina Torrey, Ivy Fine, and Tony Winnicker, February 7, 2007.

San Francisco Planning Department, *Water System Improvement Program Program EIR*, Case No. 2005.0159E, October 2008.

CHAPTER 3
Environmental Setting and Impacts

3.1 Overview

This chapter provides a project-level analysis of the physical environmental effects of implementation of the proposed Project as described in Chapter 2. The proposed Project is a component of the SFPUC Water System Improvement Project (WSIP). As such, implementation of the proposed Project would contribute to meeting overall WSIP goals and objectives, particularly that of 58 mgd of conservation savings and water recycling by year 2030. In order to meet this goal, the SFPUC plans to meet or offset 10 mgd of its retail demand in San Francisco through a combination of conservation, recycled water, and groundwater projects including the proposed Project.

As a component of WSIP, implementation of the Project has the potential to induce growth. Relevant chapters from the WSIP Final PEIR (certified on October 30, 2008) include: Chapter 5, Water Supply and System Operations; Chapter 7, Growth-Inducement Potential and Indirect Effects of Growth; and Chapter 9, CEQA Alternatives; these sections are all available for review online at: http://www.sfgov.org/planning/mea

3.1.1 Organization

Chapter 3 is organized by environmental resource topic, as follows:

Chapter 3 Sections	
3.1 Overview	3.9 Public Utilities and Services
3.2 Land Use	3.10 Biological Resources
3.3 Aesthetics	3.11 Geology and Soils
3.4 Cultural Resources	3.12 Hydrology and Water Quality
3.5 Transportation and Traffic	3.13 Hazards and Hazardous Materials
3.6 Noise and Vibration	3.14 Energy Resources
3.7 Air Quality	(References included under each section)
3.8 Recreation	

Each section of Chapter 3 contains the following elements, based on the CEQA requirements:

- **Setting** – This subsection presents a description of the existing physical environment conditions in the vicinity of the proposed Project with respect to each resource area at an appropriate level of detail to allow the reader to understand the impact analysis.

- **Regulatory Framework** – This subsection describes the existing laws and regulations applicable to protection of the environmental resource area, and the governmental agencies responsible for enforcement that are relevant to the proposed Project.

- **Impacts and Mitigation Measures** – This subsection evaluates the potential for the proposed Project to adversely affect the physical environment described in the setting. Significance criteria for evaluation of environmental impacts are defined at the beginning of each impact analysis section, along with a discussion, Approach to Analysis, which explains how the significance criteria are specifically applied in evaluating the proposed Project. The conclusion of each impact analysis is expressed in term of the impact significance, which is discussed further below. Following each impact discussion, mitigation measures are identified for all of the impacts found to be significant or potentially significant, consistent with CEQA requirements. Responsibilities for implementing mitigation measures will be defined by agreement between Daly City and the SFPUC. Therefore, the mitigation measures identified in this document are not expressly attributed to either party at this time.

Significance criteria are based on CEQA Guidelines Appendix G with some modifications. The significance criteria used to analyze each environmental resource area are presented in each section of Chapter 3 before the discussion of impacts. The categories used to designate impact significance are described below:

- **No Impact.** An impact is considered to have no impact related to the Project if there is no potential for impacts or the environmental resource does not occur within the Project area or the area of potential effect. For example, there would be no impacts related to grading if there is no grading proposed at a particular Project site.

- **Less than Significant.** This determination applies if there is a potential for some limited impact, but not a substantial adverse effect that qualifies under the significance criteria as a significant impact.

- **Less than Significant with Mitigation.** This determination applies if there is a potential for some adverse effect that meets the significance criteria, but mitigation is available to reduce the impact to a less-than-significant level. Impacts identified as "potentially" significant indicates there is a potential for this impact to occur, but there is either not enough project information or site-specific information to determine definitively that it is significant. In these cases, the EIR makes the more conservative determination. The impacts identified as "potentially significant" are treated as significant impacts in this EIR. This determination also applies to impacts that are significant and likely to occur, but for which mitigation is available to reduce the impact to a less-than significant level.

- **Significant, Unavoidable.** This determination applies to impacts that are significant but for which there appears to be no feasible mitigation available to reduce the impacts to a less-than-significant level. There might be some mitigation available to lessen the impact, but the residual effect remains significant and therefore the impact is unavoidable.

Environmental impacts are numbered throughout this EIR, using the section number followed by sequentially numbered impacts. Mitigation measures are numbered to correspond to the impact numbers; for example, Mitigation Measure 3.3-1 addresses Impact 3.3-1.

3.1.2 Water System Improvement Program Water Supply and Operations Strategy Impacts and Mitigation

As discussed in Chapter 2, the proposed Project, along with several other facility improvement projects, are components of the SFPUC's Water System Improvement Program (WSIP). The Program EIR (PEIR), which was certified by the San Francisco Planning Commission on October 30, 2008, addresses the potential environmental impacts of the WSIP and evaluates regional water supply alternatives. Because the proposed project is a component of the WSIP, the project would also contribute to the WSIP's water supply impacts.

The PEIR analyzed potential water supply and system operations impacts (separate from environmental impacts associated with the facility improvements) within the following geographic regions: the Tuolumne River, Alameda Creek, Peninsula, and Westside Basin groundwater resources systems. The PEIR also identified the cumulative effects of implementing the WSIP and system operations in combination with other past, present, and reasonably foreseeable future projects within each of these watersheds. It also discussed the potential effects of climate change and global warming on the regional water system.

The WSIP would result in changes in reservoir levels and associated changes in downstream flows in rivers and creeks in the three affected watersheds, potentially resulting in impacts on groundwater, water quality, fisheries, and terrestrial biological resources. In the event that deliveries to customers exceed 265 mgd (average annual), streamflow changes in the Tuolumne River watershed could affect fisheries and terrestrial biological resources. In the Alameda Creek and Peninsula watersheds, the WSIP, which includes restoring the historical storage capacities of Calaveras and Lower Crystal Springs Reservoirs, could affect reservoir levels, downstream flows, fisheries, and terrestrial biological resources. In addition, similar to the originally proposed WSIP, the WSIP will develop groundwater supplies in the North Westside Groundwater Basin as well as a conjunctive-use program in the South Westside Groundwater Basin.

As stated above, the proposed Project is a component of the WSIP. **Tables 3.1-1** through **3.1-5** summarize the WSIP water supply impacts and mitigation measures for each geographic region as analyzed in the PEIR.

In addition to water supply impacts and mitigation measures, the PEIR provides a program-level analysis of the impacts associated with facility improvement projects, including construction and cumulative construction, and operation impacts. This EIR addresses the same issues as the PEIR for the proposed Project at a project-level detail. All of the WSIP water supply impacts have been examined at a sufficient level of detail in the PEIR, enabling most of those effects to be mitigated or avoided through mitigation measures or revisions to the WSIP. The PEIR is available for public review at the San Francisco Planning Department, 1650 Mission Street, San Francisco, CA 94103, and is on the Planning Department's website at http://www.sfgov.org/planning/mea. The State Clearinghouse Number for the PEIR is 2005092026.

TABLE 3.1-1
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – TUOLUMNE RIVER SYSTEM AND DOWNSTREAM WATER BODIES

Impact	Significance Determination					Mitigation Measures
		Biological Resource Impacts				
	All Impacts (except Biological Resources)	Sensitive Habitats	Key Special-Status Species	Other Species of Concern	Common Habitats and Species	
STREAM FLOW						
Impact 5.3.1-1: Effects on flow along the Tuolumne River below O'Shaughnessy Dam.	LS					None required.
Impact 5.3.1-2: Effects on flow along Cherry Creek below Cherry Dam.	LS					None required.
Impact 5.3.1-3: Effects on flow along Eleanor Creek below Eleanor Dam.	LS					None required.
Impact 5.3.1-4: Effects on flow along the Tuolumne River below La Grange Dam.	LS					None required.
Impact 5.3.1-5: Effects on flow along the San Joaquin River and the Sacramento–San Joaquin Delta.	LS					None required.
GEOMORPHOLOGY						
Impact 5.3.2-1: Effects on sediment transport and channel characteristics between O'Shaughnessy Dam and Don Pedro Reservoir.	LS					None required.
Impact 5.3.2-2: Effects on sediment transport and channel characteristics below La Grange Dam.	LS					None required.
SURFACE WATER QUALITY						
Impact 5.3.3-1: Effects on water quality in Hetch Hetchy Reservoir and along the Tuolumne River below O'Shaughnessy Dam.	LS					None required.

TABLE 3.1-1 (Continued)
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – TUOLUMNE RIVER SYSTEM AND DOWNSTREAM WATER BODIES

Impact	Significance Determination					Mitigation Measures
		Biological Resource Impacts				
	All Impacts (except Biological Resources)	Sensitive Habitats	Key Special-Status Species	Other Species of Concern	Common Habitats and Species	
SURFACE WATER QUALITY (cont.)						
Impact 5.3.3-2: Effects on water quality in Don Pedro Reservoir and along the Tuolumne River below La Grange Dam.	LS					None required.
Impact 5.3.3-3: Effects on water quality along the San Joaquin River and the Sacramento–San Joaquin Delta.	LS					None required.
SURFACE WATER SUPPLIES						
Impact 5.3.4-1: Effects on Tuolumne River, San Joaquin River, and Stanislaus River water users.	LS					None required.
Impact 5.3.4-2: Effects on Delta water users.	LS					None required.
GROUNDWATER						
Impact 5.3.5-1: Alteration of stream flows along the Tuolumne River, which could affect local groundwater recharge and groundwater levels.	LS					None required.
Impact 5.3.5-2: Alteration of stream flows along the Tuolumne River, which could affect local groundwater quality.	LS					None required.
FISHERIES						
Impact 5.3.6-1: Effects on fishery resources in Hetch Hetchy Reservoir.	LS					None required.

TABLE 3.1-1 (Continued)
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – TUOLUMNE RIVER SYSTEM AND DOWNSTREAM WATER BODIES

Impact	Significance Determination					Mitigation Measures
		Biological Resource Impacts				
	All Impacts (except Biological Resources)	Sensitive Habitats	Key Special-Status Species	Other Species of Concern	Common Habitats and Species	
FISHERIES (cont.)						
Impact 5.3.6-2: Effects on fishery resources along the Tuolumne River between Hetch Hetchy Reservoir and Don Pedro Reservoir.	LS					None required.
Impact 5.3.6-3: Effects on fishery resources in Don Pedro Reservoir.	LS					None required.
Impact 5.3.6-4: Effects on fishery resources along the Tuolumne River below La Grange Dam.	LS when average annual deliveries from the watersheds are maintained at 265 mgd or less; PSM if deliveries exceed 265 mgd					**Measure 5.3.6-4a, Avoidance of Flow Changes by Reducing Demand for Don Pedro Reservoir Water:** The SFPUC will pursue a water transfer arrangement with MID/TID and/or other water agencies which would offset the WSIP's effects on water storage in Don Pedro Reservoir and minimize WSIP-induced changes in releases from La Grange Dam. **If Measure 5.3.6-4a proves to be infeasible, the SFPUC will implement Measure 5.3.6-4b. **Measure 5.3.6-4b, Fishery Habitat Enhancement:** The SFPUC will implement or fund one of two fishery habitat enhancement projects that are consistent with the Lower Tuolumne River Restoration Plan; augmentation of spawning gravel at five selected sites or the filling or isolation from the river of one of the existing inactive quarry pits.
Impact 5.3.6-5: Effects on fishery resources along the San Joaquin River.	LS					None required.

TABLE 3.1-1 (Continued)
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – TUOLUMNE RIVER SYSTEM AND DOWNSTREAM WATER BODIES

Impact	Significance Determination					Mitigation Measures
		Biological Resource Impacts				
	All Impacts (except Biological Resources)	Sensitive Habitats	Key Special-Status Species	Other Species of Concern	Common Habitats and Species	
TERRESTRIAL BIOLOGY						
Impact 5.3.7-1: Impacts on riparian habitat and related biological resources in Hetch Hetchy Reservoir and along the bedrock channel portions of the Tuolumne River from O'Shaughnessy Dam to Don Pedro Reservoir.		LS	LS	LS	LS	None required.
Impact 5.3.7-2: Impacts on alluvial features that support meadow and riparian habitat along the Tuolumne River from O'Shaughnessy Dam to Don Pedro Reservoir.		PSM	PSM	PSM	PSM	The SFPUC will implement Measure 5.3.7-2 to reduce adverse impacts on sensitive habitats, key special-status species, other species of concern, and common habitats and species to a less-than-significant level. **Measure 5.3.7-2, Controlled Releases to Recharge Groundwater in Streamside Meadows and Other Alluvial Deposits:** The SPPUC will manage releases to the Tuolumne River from Hetch Hetchy Reservoir during the spring with the goal of recharging groundwater that supports meadow and riparian habitat. The SFPUC will periodically survey meadow habitat to determine the efficacy of release management and will modify releases as necessary to sustain meadow habitat.
Impact 5.3.7-3: Impacts on biological resources in Lake Eleanor and along Eleanor Creek.		LS	LS	LS	LS	None required.
Impact 5.3.7-4: Impacts on biological resources in Lake Lloyd and along Cherry Creek.		LS	LS	LS	LS	None required.

TABLE 3.1-1 (Continued)
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – TUOLUMNE RIVER SYSTEM AND DOWNSTREAM WATER BODIES

Impact	Significance Determination					Mitigation Measures
		Biological Resource Impacts				
	All Impacts (except Biological Resources)	Sensitive Habitats	Key Special-Status Species	Other Species of Concern	Common Habitats and Species	
TERRESTRIAL BIOLOGY (cont.)						
Impact 5.3.7-5: Impacts on biological resources in Don Pedro Reservoir.		LS	LS	LS	LS	None required.
Impact 5.3.7-6: Impacts on biological resources along the Tuolumne River below La Grange Dam.		LS when average annual deliveries from the watersheds are maintained at 265 mgd or less; PSM if deliveries exceed 265 mgd	LS when average annual deliveries from the watersheds are maintained at 265 mgd or less; PSM if deliveries exceed 265 mgd	LS when average annual deliveries from the watersheds are maintained at 265 mgd or less; PSM if deliveries exceed 265 mgd	LS when average annual deliveries from the watersheds are maintained at 265 mgd or less; PSM if deliveries exceed 265 mgd	The SFPUC will implement Measures 5.3.6-4a or 5.3.7-6 to reduce adverse impacts on sensitive habitats, key special-status species, other species of concern, and common habitats and species to a less-than-significant level. **Measure 5.3.6-4a, Avoidance of Flow Changes by Reducing Demand for Don Pedro Reservoir Water** – see description above. **If Measure 5.3.6-4a proves to be infeasible, the SFPUC will implement Measure 5.3.7-6. **Measure 5.3.7-6, Lower Tuolumne River Riparian Habitat Enhancement:** Consistent with the Lower Tuolumne River Restoration Plan, the SFPUC will protect and enhance one mile of riparian vegetation within the contemporary floodplain.
Impact 5.3.7-7: Conflicts with the provisions of adopted conservation plans or other approved biological resources plans for the Tuolumne Wild and Scenic River.		LS				None required.

TABLE 3.1-1 (Continued)
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – TUOLUMNE RIVER SYSTEM AND DOWNSTREAM WATER BODIES

Impact	Significance Determination					Mitigation Measures
		Biological Resource Impacts				
	All Impacts (except Biological Resources)	Sensitive Habitats	Key Special-Status Species	Other Species of Concern	Common Habitats and Species	
RECREATIONAL AND VISUAL RESOURCES						
Impact 5.3.8-1: Effects on reservoir recreation due to changes in water system operations.	LS					None required.
Impact 5.3.8-2: Effects on river recreation due to changes in water system operations.	LS					None required.
Impact 5.3.8-3: Effects on the aesthetic values of the Tuolumne Wild and Scenic River.	LS					None required.
ENERGY RESOURCES						
Impact 5.3.9-1: Effects on hydropower generation at facilities along the Tuolumne River	B					None required.

TABLE 3.1-2
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – ALAMEDA CREEK WATERSHED

Impact	Significance Determination					Mitigation Measures
	All Impacts (except Biological Resources)	Biological Resource Impacts				
		Sensitive Habitats	Key Special Status-Species	Other Species of Concern	Common Habitats and Species	
STREAM FLOW						
Impact 5.4.1-1: Effects on flow along Calaveras Creek below Calaveras Reservoir.	LS					None required
Impact 5.4.1-2: Effects on flow along Alameda Creek below the diversion dam.	SU					**Measure 5.4.1-2, Diversion Tunnel Operation:** The SFPUC will implement operational criteria for the diversion dam which will require that water not needed to fill Calaveras Reservoir would be released to Alameda Creek below the diversion dam.
Impact 5.4.1-3: Effects in San Antonio Reservoir and along San Antonio Creek.	LS					None required.
Impact 5.4.1-4: Effects on flow along Alameda Creek below the confluence of San Antonio Creek.	LS					None required.
GEOMORPHOLOGY						
Impact 5.4.2-1: Effects on channel formation and sediment transport along Calaveras Creek.	LS					None required.
Impact 5.4.2-2: Effects on channel formation and sediment transport along Alameda Creek downstream of the diversion dam.	LS					None required.
Impact 5.4.2-3: Effects on channel formation and sediment transport along San Antonio Creek downstream of San Antonio Reservoir.	LS					None required.
SURFACE WATER QUALITY						
Impact 5.4.3-1: Effects on water quality in Calaveras Reservoir.	LS					None required.

TABLE 3.1-2 (Continued)
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – ALAMEDA CREEK WATERSHED

Impact	Significance Determination					Mitigation Measures
		Biological Resource Impacts				
	All Impacts (except Biological Resources)	Sensitive Habitats	Key Special Status-Species	Other Species of Concern	Common Habitats and Species	
SURFACE WATER QUALITY (cont.)						
Impact 5.4.3-2: Effects on water quality in San Antonio Reservoir.	LS					None required.
Impact 5.4.3-3: Changes in water quality along Calaveras, San Antonio, and Alameda Creeks.	LS					None required.
GROUNDWATER BODIES						
Impact 5.4.4-1: Changes in groundwater levels, flows, quality, and supplies.	LS					None required.
FISHERIES						
Impact 5.4.5-1: Effects on fishery resources in Calaveras Reservoir.	B					None required.
Impact 5.4.5-2: Effects on fishery resources along Calaveras Creek below Calaveras Dam and along Alameda Creek below confluence with Calaveras Creek.	B					None required.
Impact 5.4.5-3: Effects on fishery resources along Alameda Creek downstream of Alameda Creek Diversion Dam.	PSM					**Measure 5.4.5-3a, Minimum Flows for Resident Trout on Alameda Creek:** The SFPUC will release a minimum flow of approximately 10 cubic feet per second from the diversion dam and monitor the effects of the release on resident trout spawning and egg incubation. ** If monitoring results for Measure 5.4.5-3a indicate the measure is unsuccessful, the SFPUC will implement Measure 5.4.5-3b. **Measure 5.4.5-3b, Alameda Diversion Dam Restrictions or Fish Screens:** If after 10 years the minimum release does not sustain the resident trout population, the SFPUC will either increase releases from the diversion dam or install a fish passage barrier on the diversion tunnel.

TABLE 3.1-2 (Continued)
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – ALAMEDA CREEK WATERSHED

Impact	Significance Determination					Mitigation Measures
		Biological Resource Impacts				
	All Impacts (except Biological Resources)	Sensitive Habitats	Key Special Status-Species	Other Species of Concern	Common Habitats and Species	
FISHERIES (cont.)						
Impact 5.4.5-4: Effects on fishery resources in San Antonio Reservoir.	B					None required.
Impact 5.4.5-5: Effects on fishery resources along San Antonio Creek below San Antonio Reservoir.	LS					None required.
Impact 5.4.5-6: Effects on fishery resources along Alameda Creek below confluence with San Antonio Creek.	LS					None required.
TERRESTRIAL BIOLOGY						
Impact 5.4.6-1: Effects on riparian habitat and related biological resources in Calaveras Reservoir.		PSM	PSM	LS	LS	The SFPUC will implement Measure 5.4.6-1 to reduce adverse impacts on sensitive habitats and key special-status species to a less-than-significant level. **Measure 5.4.6-1, Compensation for Impacts on Terrestrial Biological Resources:** The SFPUC will protect, restore, and enhance existing riparian habitat and/or create new habitat that compensates for WSIP-induced habitat losses at Calaveras Reservoir. Compensatory habitat may be provided as part of the SFPUC's Habitat Reserve Program.
Impact 5.4.6-2: Effects on riparian habitat and related biological resources along Alameda Creek, from below the diversion dam to the confluence with Calaveras Creek.		LS	PSM	LS	N/A	The SFPUC will implement Measures 5.4.1-2 and 5.4.5-3a to reduce adverse impacts on key special-status species to a less-than-significant level. **Measure 5.4.1-2, Diversion Tunnel Operation** – see description above. **Measure 5.4.5-3a, Minimum Flows for Resident Trout on Alameda Creek** – see description above.

TABLE 3.1-2 (Continued)
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – ALAMEDA CREEK WATERSHED

Impact	Significance Determination					Mitigation Measures
	All Impacts (except Biological Resources)	Biological Resource Impacts				
		Sensitive Habitats	Key Special Status-Species	Other Species of Concern	Common Habitats and Species	
TERRESTRIAL BIOLOGY (cont.)						
Impact 5.4.6-3: Effects on riparian habitat and related biological resources along Calaveras Creek, from Calaveras Reservoir to the confluence with Alameda Creek.		LS	PSM	LS	LS	The SFPUC will implement Measure 5.4.6-3 to reduce adverse impacts on key special-status species to a less-than-significant level. **Measure 5.4.6-3, Operational Procedures for Calaveras Dam Releases:** The SFPUC will manage releases from Calaveras Reservoir to mimic a more natural hydrologic regime in the creek for the benefit of terrestrial biological resources. The specifics of this mitigation measure will be determined as part of project-level CEQA review.
Impact 5.4.6-4: Effects on riparian habitat and related biological resources along Alameda Creek, from the confluence with Calaveras Creek to the confluence with San Antonio Creek.		LS	PSM	LS	LS	The SFPUC will implement Measures 5.4.6-3 and 5.4.5-3a to reduce adverse impacts on key special-status species to a less-than-significant level. **Measure 5.4.6-3, Operational Procedures for Calaveras Dam Releases** – see description above. **Measure 5.4.5-3a, Minimum Flows for Resident Trout on Alameda Creek** – see description above.
Impact 5.4.6-5: Effects on riparian habitat and related biological resources in San Antonio Reservoir.		LS	LS	LS	LS	None required.
Impact 5.4.6-6: Effects on riparian habitat and related biological resources along San Antonio Creek between Turner Dam and the confluence with Alameda Creek.		LS	LS	LS	N/A	None required.
Impact 5.4.6-7: Effects on riparian habitat and related biological resources along Alameda Creek below the confluence with San Antonio Creek.		LS	LS	LS	N/A	None required.

TABLE 3.1-2 (Continued)
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – ALAMEDA CREEK WATERSHED

Impact	Significance Determination					Mitigation Measures
		Biological Resource Impacts				
	All Impacts (except Biological Resources)	Sensitive Habitats	Key Special Status-Species	Other Species of Concern	Common Habitats and Species	
TERRESTRIAL BIOLOGY (cont.)						
Impact 5.4.6-8: Conflicts with the provisions of adopted conservation plans or other approved biological resources plans.		LS				None required.
RECREATION AND VISUAL						
Impact 5.4.7-1: Effects on recreational facilities and/or activities.	LS					None required.
Impact 5.4.7-2: Visual effects on scenic resources or visual character of the water bodies.	LS					None required.

TABLE 3.1-3
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – PENINSULA WATERSHEDS

Impact	Significance Determination					Mitigation Measures
		Biological Resource Impacts				
	All Impacts (except Biological Resources)	Sensitive Habitats	Key Special-Status Species	Other Species of Concern	Common Habitats and Species	
STREAM FLOW						
Impact 5.5.1-1: Effects on flow along San Mateo Creek.	LS					None required.
Impact 5.5.1-2: Effects on flow along Pilarcitos Creek.	LS					None required.
GEOMORPHOLOGY						
Impact 5.5.2-1: Changes in sediment transport and channel morphology in the Peninsula watershed.	LS					None required.
WATER QUALITY						
Impact 5.5.3-1: Effects on water quality in Crystal Springs Reservoir, San Andreas Reservoir, and San Mateo Creek.	LS					None required.
Impact 5.5.3-2: Effects on water quality in Pilarcitos Reservoir and along Pilarcitos Creek.	LS					None required.
GROUNDWATER						
Impact 5.5.4-1: Alteration of stream flows along Pilarcitos Creek, which could affect groundwater levels and water quality.	LS					None required.
FISHERIES						
Impact 5.5.5-1: Effects on fishery resources in Crystal Springs Reservoir (Upper and Lower).	PSU					**Measure 5.5.5-1, Create New Spawning Habitat Above Crystal Springs Reservoir:** The SFPUC will survey the extent and quality of fish spawning habitat lost due to inundation and, if feasible, create new spawning habitat at a higher elevation. The specifics of this mitigation measure will be determined as part of project-level CEQA review.

TABLE 3.1-3 (Continued)
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – PENINSULA WATERSHEDS

Impact	Significance Determination					Mitigation Measures
		Biological Resource Impacts				
	All Impacts (except Biological Resources)	Sensitive Habitats	Key Special-Status Species	Other Species of Concern	Common Habitats and Species	
FISHERIES (cont.)						
Impact 5.5.5-2: Effects on fishery resources in San Andreas Reservoir.	LS					None required.
Impact 5.5.5-3: Effects on fishery resources along San Mateo Creek.	LS					None required.
Impact 5.5.5-4: Effects on fishery resources in Pilarcitos Reservoir.	LS					None required.
Impact 5.5.5-5: Effects on fishery resources along Pilarcitos Creek below Pilarcitos Reservoir.	LS					None required.
TERRESTRIAL BIOLOGY						
Impact 5.5.6-1: Impacts on biological resources in Upper and Lower Crystal Springs Reservoirs.		PSM	PSM	PSM	PSM	The SFPUC will implement Measures 5.5.6-1a and 5.5.6-1b to reduce adverse impacts on sensitive habitats, key special-status species, other species of concern, and common habitats and species to a less-than-significant level. In addition, the SFPUC will implement Measure 5.5.6-1c to mitigate adverse impacts to key special-status plant species (i.e., fountain thistle) adapted to serpentine seeps. **Measure 5.5.6-1a, Adaptive Management of Freshwater Marsh and Wetlands at Upper and Lower Crystal Springs Reservoirs:** The SFPUC will develop an adaptive management plan to minimize adverse effects of the WSIP-induced rise in average water levels, and periodic drawdown of reservoir water levels for maintenance, on San Francisco garter snakes and red-legged frogs. **Measure 5.5.6-1b, Compensation for Impacts on Terrestrial Biological Resources:** The SFPUC will protect, restore, and enhance existing wetland and upland habitat and/or create new habitat that compensates for WSIP-induced habitat losses at Crystal Springs Reservoir. Compensatory habitat may be provided as part of the SFPUC's Habitat Reserve Program.

TABLE 3.1-3 (Continued)
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – PENINSULA WATERSHEDS

Impact	Significance Determination					Mitigation Measures
	All Impacts (except Biological Resources)	Biological Resource Impacts				
		Sensitive Habitats	Key Special-Status Species	Other Species of Concern	Common Habitats and Species	
TERRESTRIAL BIOLOGY (cont.)						
Impact 5.5.6-1 (cont.)						**Measure 5.5.6-1c, Compensation for Serpentine Seep-Related Special-Status Plants:** The SFPUC will protect, restore, and enhance existing habitat and/or create new habitat that compensates for WSIP-induced habitat losses for plant species adapted to serpentine seeps.
Impact 5.5.6-2: Impacts on biological resources in San Andreas Reservoir.		LS	LS	LS	LS	None required.
Impact 5.5.6-3: Impacts on biological resources along San Mateo Creek below Lower Crystal Springs Dam.		LS	LS	LS	LS	None required.
Impact 5.5.6-4: Impacts on biological resources in Pilarcitos Reservoir.		LS	LS	LS	LS	None required.
Impact 5.5.6-5: Impacts on biological resources along Pilarcitos Creek below Pilarcitos Reservoir.		LS	LS	LS	LS	None required.
Impact 5.5.6-6: Impacts along Pilarcitos Creek below Stone Dam.		LS	LS	LS	LS	None required.
Impact 5.5.6-7: Conflicts with the provisions of adopted conservation plans or other approved biological resource plans.		LS				None required.
RECREATIONAL AND VISUAL RESOURCES						
Impact 5.5.7-1: Effects on recreational facilities and/or activities.	LS					None required.
Impact 5.5.7-2: Visual effects on scenic resources or the visual character of water bodies.	LS					None required.

TABLE 3.1-4
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – WESTSIDE GROUNDWATER BASIN

Impact	Significance Determination		Mitigation Measures
	North Westside Groundwater Basin	South Westside Groundwater Basin	
RECREATIONAL AND VISUAL RESOURCES			
Impact 5.6-1: Basin overdraft due to pumping from the Westside Groundwater Basin.	PSM	LS	The SFPUC will implement Measure 5.6.1 to reduce adverse impacts to the North Westside Groundwater Basin to a less-than-significant level. **Measure 5.6-1, Groundwater Monitoring to Determine Basin Safe Yield:** The SFPUC will continue ongoing groundwater and lake level monitoring programs to determine the safe yield of the North Westside Groundwater Basin in order to avoid overdraft and associated effects including adverse effects on surface water features and seawater intrusion
Impact 5.6-2: Changes in water levels in Lake Merced and other surface water features, including Pine Lake, due to decreased groundwater levels in the Westside Groundwater Basin.	PSM	N/A	The SFPUC will implement Measures 5.6.1 and 5.6-2 to reduce adverse impacts to the North Westside Groundwater Basin to a less-than-significant level. **Measure 5.6-1, Groundwater Monitoring to Determine Basin Safe Yield** – see description above. **Measure 5.6-2, Implementation of a Lake Level Management Plan:** The SFPUC will develop and implement a lake level management plan identifying strategies for altering pumping patterns or lake augmentation to maintain Lake Merced water levels within the desired long-term range.
Impact 5.6-3: Seawater intrusion due to decreased groundwater levels in the Westside Groundwater Basin.	PSM	LS	The SFPUC will implement Measure 5.6.1 to reduce adverse impacts to the North Westside Groundwater Basin to a less-than-significant level. **Measure 5.6-1, Groundwater Monitoring to Determine Basin Safe Yield** – see description above.
Impact 5.6-4: Land subsidence due to decreased groundwater levels in the Westside Groundwater Basin if the historical low water levels are exceeded.	LS	LS	None required.
Impact 5.6-5: Contamination of drinking water due to groundwater pumping in the Westside Groundwater Basin.	PSM	PSM	The SFPUC will implement Measure 5.6.5 to reduce adverse impacts to the North Westside and South Westside Groundwater Basins to a less-than-significant level. **Measure 5.6.5, Drinking Water Source Assessments for Groundwater Wells:** The SFPUC will develop and implement a source water protection program for wells constructed under the Local and Regional Groundwater Projects that are considered vulnerable to contamination on the basis of the drinking water source assessment prepared in accordance with Department of Health Services regulations.
Impact 5.6-6: Drinking water contaminants above maximum contaminant levels and adverse effects of adding treated groundwater to the distribution system.	LS	LS	None required.

TABLE 3.1-5
SUMMARY OF WSIP WATER SUPPLY IMPACTS AND MITIGATION MEASURES – CUMULATIVE WATER SUPPLY

Cumulative Water Supply Impact	Cumulative Impact Significance Determination							Mitigation Measures
	Hydrology	Geomorphology	Surface Water Quality	Groundwater	Fisheries	Terrestrial Biology	Recreation / Visual Quality	
Impact 5.7.2-1: Tuolumne River – Hetch Hetchy Reservoir to Don Pedro Reservoir.	LS	LS	LS	LS	LS	LS	LS	None required.
Impact 5.7.2-2: Tuolumne River – Don Pedro Reservoir to the San Joaquin River.	LS	LS	LS	LS	LS	LS	LS	None required.
Impact 5.7.2-3: San Joaquin River, Stanislaus River, and the Delta.	LS	LS	LS	LS	LS	LS	LS	None required.
Impact 5.7.3-1: Alameda Creek watershed.	N/A	LS	LS	LS	LS	LS	LS	None required.
Impact 5.7.4-1: San Mateo Creek watershed.	LS	LS	LS	LS	LS	LS	LS	None required.
Impact 5.7.4-2: Pilarcitos Creek watershed.	LS	LS	LS	LS	LS	LS	LS	None required.
Impact 5.7.5-1: North Westside Groundwater Basin.	LS							None required.
Impact 5.7.5-2: South Westside Groundwater Basin.	LS							None required.

NOTE: Significance determinations presented in this table assume implementation of all mitigation measures as they are presented in Chapter 5, Section 5.6, and described in Chapter 6.

3.2 Land Use

This section addresses land use issues related to the construction and operation of the proposed Project. This evaluation is based on discussions with local agency representatives, field reconnaissance, and a review of adopted general and regional plans and aerial photographs.

3.2.1 Setting

The proposed alignment (from the southern point of connection) begins in Daly City underneath Lake Merced Boulevard, south of the intersection with John Muir Drive. At the intersection of John Muir Drive and Lake Merced Boulevard, the pipeline crosses into the jurisdiction of the City and County of San Francisco (San Francisco) and continues along Lake Merced Boulevard before entering the Harding Park maintenance yard (see Figure 2-2).

The Project area is located in densely populated, urbanized areas of the southwest area of San Francisco and the northwest area of Daly City. Land uses adjacent to the Project area are entirely developed, comprising a mix of residential and recreational land uses, including golf courses, a lake, and a park. Following is a description of the land use context of the Project for its Daly City and San Francisco segments.

Daly City

Land Use Context

Daly City lies on the northernmost edge of San Mateo County and shares its boundaries to the north with San Francisco. Known as the "Gateway to the Peninsula," Daly City extends from the Pacific Ocean on the west to nearly San Francisco Bay on the east. It is the largest city in San Mateo County. Daly City forms a subregional center for retail, healthcare, and recreational activities. The proposed Project is located at the most northwesterly portion of Daly City.

Pipeline Alignment

Approximately 400 linear feet of the proposed pipeline alignment is in Daly City. The proposed alignment along Lake Merced Boulevard through Daly City parallels the Olympic Club, a private athletic club and golf course, to the west and residential land uses to the east.

San Francisco

Land Use Context

San Francisco is located at the northern end of the San Francisco Peninsula with the Pacific Ocean to the west and San Francisco Bay to the north and east. San Francisco is a commerce, finance, transportation, and cultural center for the Bay Area. The northern portion of the proposed Project is located in the southwestern portion of San Francisco.

Pipeline Alignment

Approximately 3,824 linear feet of the proposed pipeline alignment is in San. From Daly City, the pipeline alignment continues underneath Lake Merced Boulevard into San Francisco, paralleling Lake Merced to the west and the San Francisco Golf Club to the east. The pipeline alignment continues north with Harding Park to the west and residential land uses to the east. Nearby residences include the Lake Merced Hills apartment and condominium complex, located off of North Lake Merced Hills Drive (see Figure 2-2). Parkmerced, a planned neighborhood of multi-family high-rise apartment towers and low-rise (garden-level) apartments, is located to the east of the pipeline alignment from Brotherhood Way and continuing to the north beyond the northern limit of the pipeline alignment. San Francisco State University is located further to the north on the eastern edge of Lake Merced Boulevard, beyond the limits of the pipeline alignment.

Storage Tank and Pump Station

The proposed site for the storage tank and pump station is the parking lot at the Harding Park maintenance yard. Harding Park borders the maintenance yard parking lot to the north, west and south; Lake Merced Boulevard is east of the site. The property is owned by SFPUC, which has granted the San Francisco Recreation and Park Department use of the land for recreational purposes. The maintenance building is used by San Francisco Recreation and Park Department staff for maintenance and related activities associated with the golf course. The maintenance parking lot is the main parking lot used for Recreation and Park Department staff parking.

3.2.2 Regulatory Framework

Federal

There are no federal regulations pertaining to land use for this project.

State

California Coastal Commission

The California Coastal Act of 1976 established the California Coastal Commission (CCC) to "protect, conserve, restore, and enhance environmental and human-based resources of the California coast and ocean for environmentally sustainable and prudent use by current and future generations." The CCC and the San Francisco Bay Conservation and Development Commission (BCDC) are the two management agencies responsible for administering the Federal Coastal Zone Management Act in California. The Coastal Act describes the types of activities that are permitted within the Coastal Zone and provides guidelines for managing these activities and protecting the coastline and resources. CCC requires a Coastal Development Permit (CDP) for any development occurring in the Coastal Zone, which is delineated by official maps and generally includes areas extending from the shoreline inland for anywhere from 500 yards to five miles. All of the components of the proposed Project fall within the Coastal Zone.

The California Coastal Act authorized the creation of Local Coastal Programs to help carry out the requirements of the Act. Although the CCC maintains jurisdiction over development on the immediate shoreline, certified local coastal programs issue coastal development permits for projects that fall within their jurisdiction. If more than one Local Coastal Program has jurisdiction over a project area, the applicant must secure permits from each one. Daly City and San Francisco have established Local Coastal Programs, discussed below. The proposed Project meets the definition of "development"[1] in the Coastal Act.

On June 3, 1980 the Daly City Council adopted a categorical exclusion that exempts properties beyond 300 feet from the coastline from the coastal permit requirement. Therefore, a coastal permit is not required for the portion of work within the City of Daly City. In San Francisco, if the Zoning Administrator determines that the project is subject to a Coastal Development Permit Application, the San Francisco Planning Department would determine whether the project is consistent with the Local Coastal Program in San Francisco prior to issuance of a Coastal Development Permit.

Local

The Project would occur on lands under Daly City and San Francisco jurisdiction. By mutual consent, Daly City is the lead agency and San Francisco is a responsible agency with respect to CEQA. General Plan goals, policies, and implementation actions related to land use generally call for the use of an environmental review process to minimize potential impacts of projects and strive to minimize the impact of construction projects on surrounding land uses. The following discussion addresses the consistency of the project with applicable General Plan goals and policies for each jurisdiction, consistent with CEQA Guidelines Section 15125(d).

Daly City

The Daly City General Plan provides the goals and policy framework related to land use within its boundaries.

The City's land use goal is to "create a balanced mixture of land uses that ensure equal opportunities for employment, housing, open space, and services which adequately serve both personal needs of the citizens and economic needs of the community" (City of Daly City, 1987). While the portion of the proposed Project within Daly City would be located entirely within a public roadway, adjacent areas include residential land uses and a golf course. The following policy is provided in the Residential Land Use Element as it relates to the Project:

> Policy 8.2: Uses permitted in residential neighborhoods should be low-intensity land uses and subject to design and performance guidelines.

Daly City's General Plan designates areas adjacent to the proposed Project as Single-Family Residential (City of Daly City, 2002). The proposed Project would be entirely buried underneath a public roadway (where other utilities are located) and is consistent with existing land uses.

1 Development is defined in § 30106 of the Coastal Act.

As stated above, the portion of the Project within Daly City is located within the Coastal Zone, which falls under the jurisdiction of the Daly City Coastal Element Local Coastal Program. The Coastal Program implements the policies and provisions of the Coastal Act at the local level, and requires discretionary review by the Planning Commission and City Council for any development within 1,000 feet of the coastline. Although the proposed pipeline would be located within the Coastal Zone, it represents a below-grade structure that would be installed in a roadway. Adjacent land uses would not be permanently altered by Project implementation. The Project would not interfere with the public's right of access to the coastline nor alter the shoreline, nor would it alter any rivers or streams. Proposed facilities would not conflict with existing Coastal Zone designations. No conflicts with any applicable plans, policies, or regulations are expected to result. The Project is also located more than 5,000 feet from the nearest coastline.

San Francisco

The majority of the Project is located within the jurisdictional boundaries of San Francisco and is subject to the City and County of San Francisco (CCSF) land use plans and policies. These plans include the San Francisco General Plan (CCSF, 1988), which sets forth the comprehensive, long-term land use policy for San Francisco; and the Accountable Planning Initiative, which established Priority Policies for the City.

One of the basic goals of the San Francisco General Plan is "coordination of the growth and development of the city with the growth and development of adjoining cities and counties and of the San Francisco Bay Region." The San Francisco General Plan also contains area plans that cover specific geographic areas within the city. One of the area plans, the Western Shoreline Plan, covers the western shoreline of San Francisco and includes the location of the proposed Project. This area plan addresses objectives to preserve open space, improve public access to the shoreline, and enhance recreation for 10 subareas, including Lake Merced.

The Western Shoreline Plan also includes the City's Local Coastal Program policies. The San Francisco Coastal Zone extends approximately six miles along the western shoreline and includes all of Lake Merced and most of Harding Park, and areas to the east, including Lake Merced Boulevard.

The applicable policies of the Western Shoreline Plan include:

> *Policy 5.1*: Preserve in a safe, attractive and usable condition the recreational facilities, passive activities, playgrounds and vistas of Lake Merced area for the enjoyment of citizens and visitors to the city.
>
> *Policy 5.2*: Maintain a recreational pathway around the lake designed for multiple use.
>
> *Policy 5.3*: Allow only those activities in Lake Merced area which will not threaten the quality of the water as a standby reservoir for emergency use.

The San Francisco Planning Code implements the San Francisco General Plan, and governs permitted uses, densities, and configurations of structures within San Francisco. Permits to

construct new structures may not be issued unless found to conform to the Planning Code or an exception is granted pursuant to provisions of the code.

San Francisco designates the majority of the lands adjacent to the proposed pipeline alignment, and at the Harding Park maintenance yard, as Public District (P). A portion of the land adjacent to the pipeline alignment (Parkmerced) is designated Residential, Mixed District (RM 1 and RM 4) (City of San Francisco, 2006a). As a public structure and use, the proposed storage tank, pump station, and radio antenna would be a principal permitted use in the Public District. The Harding Park maintenance yard is also designated an as Open Space (OS) Height and Bulk District (City of San Francisco, 2006b). The Planning Code prescribes no height limits in the OS Height and Bulk District; height and bulk is determined in accordance with the objectives, principles, and policies of the General Plan.

On November 4, 1986, the voters of San Francisco passed Proposition M, the Accountable Planning Initiative (Section 101.1 to the City Planning Code), which establishes Priority Policies for the City. These policies address wide-ranging issues, including the preservation of existing neighborhood and housing uses and character, and the protection of parks and open space. In accordance with the Accountable Planning Initiative, prior to issuing a permit for any project, the CCSF is required to find that the project is consistent with the Priority Policies.

The Project would be consistent with policies of San Francisco's Western Shoreline Plan which supports the preservation of recreational uses and vistas in the Lake Merced area. The Project is also consistent with policies contained in San Francisco's Conservation Element of the current General Plan, which supports research into the necessity and feasibility of water reclamation. Land use impacts specified under these plans that pertain to recreation, water quality, aesthetics and public utilities are addressed in their respective sections in Chapter 3 of this EIR.

3.2.3 Impacts and Mitigation Measures

Significance Criteria

Daly City has not formally adopted significance standards for impacts related to land use. Appendix G of the *CEQA Guidelines* generally considers that implementation of the proposed Project would have a significant impact if it were to:

- Physically divide an established community
- Have a substantial impact upon the existing character of the vicinity
- Conflict with any applicable land use plan
- Conflict with any habitat conservation plan or natural community plan

CEQA Guidelines Appendix G also indicates that a project could have a significant effect on the environment if it were to conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or

mitigating an environmental effect. Resource sections evaluated in this EIR consider conflicts with applicable plans and policies specifically related to environmental impact evaluation. Refer to Section 3.2.2, Regulatory Framework, regarding description of project consistency with plans and policies. As proposed, the Project would not conflict with any habitat conservation plan or natural community plan because none are present in the project area, and therefore this issue is not applicable to the Project.

Approach to Analysis

The assessment of land use impacts considers the Project's potential changes to existing land uses that would divide an established community; substantially impact the character of uses adjacent to, or in the vicinity of, the Project alignment; or substantially disrupt or displace existing land uses and activities. The impact assessment evaluates potential temporary impacts resulting from construction activity as well as potential permanent impacts resulting from the siting, operation and maintenance of the proposed pipeline, storage tank, and pump station, including potential impacts to land uses that are within one quarter mile of, or directly abut, Lake Merced Boulevard and the Harding Park maintenance parking lot. Impacts specific to recreational land uses are discussed in greater detail in Section 3.8, Recreation. Other potential physical environmental effects on surrounding communities and land uses resulting from construction and operation of the Project are described within this section, as well as in other relevant sections of this EIR, including Sections 3.3, Aesthetics; 3.5, Transportation and Traffic; 3.6, Noise; and 3.7, Air Quality. Mitigation measures included in the above sections would serve to reduce the effects of significant impacts pertaining to these types of construction-related physical impacts (i.e., aesthetics, air quality, noise, and traffic).

Land use impacts associated with the Project would be short-term and occur during the construction phase of the Project. Construction activities could result in temporary disruptions to adjacent land uses resulting from nuisance effects such as noise, dust, construction traffic, and possible interference of access to locations along Lake Merced Boulevard during construction activities. Once operational, the Project would have negligible long-term or permanent land use impacts because the facilities constructed would be primarily underground. The pump station will be constructed on an already impacted site located within the maintenance yard.

Construction Impacts

Impact 3.2-1: Physically divide an established community during construction. (Less than Significant)

Construction activities for the pipeline would occur within a public roadway (Lake Merced Boulevard), at a maintenance parking lot for a public golf course (Harding Park), and at construction staging areas located outside the road, which is surrounded by residential and recreational land uses. In addition, Lake Merced Boulevard is intersected by local streets and arterials. While the Project would temporarily disrupt or displace some land uses within or adjacent to the Project alignment by, for example, temporarily impeding access and removing parking on Vidal Drive, temporary access disruptions would not last longer than an 12 hour

period (with the exception of sections of the sidewalk along Lake Merced Boulevard, which would have one week long disruptions) as construction proceeds along Lake Merced Boulevard, and temporary disruption of three parking spaces on Vidal Drive would last 12-16 months. Consequently, Project construction would not physically divide a community, and no mitigation measures beyond those for temporary traffic management (see Mitigation Measure 3.5-1: Implement Traffic Control Plan) would be required (see Section 3.5, Transportation and Traffic for a detailed analysis of potential traffic impacts).

Mitigation: None required.

Impact 3.2-2: Have a substantial impact upon the existing character of the vicinity during construction. (Less than Significant)

Construction would take place during the daytime and on weekdays over a 12-16 month schedule. Pipeline construction would last approximately six months, while construction at the maintenance yard parking lot would last about 14 months. During these periods, the immediate vicinity of the Project sites would take on the character of a construction zone. However, pipeline construction would progress along the alignment (rather than remaining at one location) at a rate of about 100 to 300 linear feet per day, so that any given property would typically experience disturbance from construction activities (such as noise) for one or two weeks (not for the entire duration of Project construction) followed later by a couple of days during street restoration and paving of the trench.

Staging areas along Vidal Drive (SFPUC/Construction Management Bureau's trailer) and along John Muir Drive (contractor trailer, equipment and vehicle storage) (see Figure 2-2) would be occupied throughout the duration of the construction schedule. Access to some properties along the alignment would be temporarily disrupted, but would be maintained (refer to Section 3.5, Transportation, for more information). During construction the staging area next to the Vista Grande Canal along John Muir Drive will be enclosed by a visual screening fence to screen the area from the adjacent Olympic Club and John Muir Drive.

Mitigation: None required.

Operational Impacts

Impact 3.2-3: Physically divide an established community during operation. (Less than Significant)

During Project operation, the proposed pipeline would be buried underneath Lake Merced Boulevard. Neither the use nor configuration of Lake Merced Boulevard would change with implementation of the proposed Project. Because the new storage tank and pump station would be

constructed within the maintenance parking lot for Harding Park on SFPUC lands, the proposed facilities would not physically divide (i.e., permanently separate) an established community, and no mitigation measures would be required. Access to the Harding Park maintenance yard and Harding Park would be maintained throughout construction of the storage tank and pump station.

Mitigation: None required.

Impact 3.2-4: Have a substantial impact upon the existing character of the vicinity during operation. (Less than Significant)

The Project would not be expected to result in any long-term changes in land uses that would significantly affect the Project vicinity's existing character. As discussed above, the Project would not be expected to be incompatible with established land uses in the vicinity. The proposed pipeline would be located entirely underneath Lake Merced Boulevard and as such would be a continuation of a land use dedicated for a transportation and utility corridor. Construction of the storage tank and pump station at the existing maintenance parking lot also would not substantially affect the existing land use character of the vicinity. The tank would be underground and the pump station would be a relatively small structure at one corner of the parking lot (24 feet by 19 feet with an approximate height of 16 feet). Therefore, the Project would have no significant long-term impacts on the existing character of the vicinity because it would not change or intensify the type of land use along the Project alignment, and no mitigation measures would be required.

Mitigation: None required.

3.2.4 References – Land Use

City of Daly City, *City of Daly City General Plan: Housing, Land Use, and Circulation Elements*, 1987.

City of Daly City, City of Daly City Zoning Map. August 1998, Updated June 2002.

City and County of San Francisco (CCSF), *San Francisco General Plan*, 1988, as amended through 1996.

City of San Francisco. 2006a. Zoning Districts (Zoning Map of the City and County of San Francisco. Planning Department). Accessed at, http://www.municode.com/Resources/gateway.asp?pid=14145&sid=5 on April 21, 2009.

City of San Francisco. 2006b. Height and Bulk Districts (Zoning Map of the City and County of San Francisco). Planning Dcpartmcnt. Accessed at http://www.municodc.com/Rcsources/gateway.asp?pid=14145&sid=5 on April 21, 2009

3.3 Aesthetics

This section describes the aesthetic resources of the Project area, including areas within the viewshed of the proposed Project components, and potential for implementation of the proposed Project to result in aesthetic resources impacts.

3.3.1 Setting

For the purpose of this EIR, aesthetic resources are generally defined as the natural and built landscape features that can be seen. The overall visual character of a given area results from the unique combination of natural landscape features, including landform, water, and vegetation patterns, as well as built features such as buildings, roads, and other structures.

The assessment of existing visual conditions is based on site surveys conducted in July 2008, March 2009, and May 2009. A set of eight photographs is included to document the existing visual conditions of the Project area and surroundings. **Figure 3.3-1** provides an overview of photo locations; and **Figures 3.3-2a** and **3.3-2b** depict views of the Project site and adjacent areas.

Photo 1 presents a photograph taken from a viewpoint along the proposed pipeline alignment along Lake Merced Boulevard. Views along Lake Merced Boulevard include residential areas, and native and landscaped open space areas, including parks, golf courses, and open water. Natural and topographic features prominent in views along the proposed pipeline alignment include a large lake (Lake Merced) and associated wetland areas; trees, shrubs, and other vegetation; and recreation trails as seen towards the west (right) in Photo 1. Mature trees of varying height (refer to Photos 1, 3 and 4) are located between the roadway and adjacent land uses throughout much of the Lake Merced Boulevard alignment, partially screening views of the proposed Project area from adjacent land uses. South of Brotherhood Way, a vegetated berm rises to the east of the Lake Merced Boulevard right-of-way, which effectively screens Lake Merced Boulevard from residences in the Lake Merced Hills residential neighborhood (left side of Photo 1).

North of Brotherhood Way, views from the Parkmerced residential neighborhood are relatively open, with scattered trees and shrubs providing partial screening of Lake Merced Boulevard.

Photo 2 presents a photograph of the proposed Vista Grande Canal construction staging area adjacent to John Muir Drive. Similar to Lake Merced Boulevard, views in the vicinity of staging areas include a mix of vegetation, including lower grasses that cover flat areas, and mature trees that screen views of adjacent land uses.

The next set of photos depicts views surrounding the Harding Park maintenance yard parking lot, located in the southern part of Harding Park, adjacent to Lake Merced Boulevard. The maintenance yard parking lot is surrounded by open space (golf course) to the north and west, and lies approximately 300 feet west of the closest residential neighborhood (Parkmerced); several multi-family apartments located east of Lake Merced Boulevard face the maintenance yard. The maintenance yard parking lot is partially visible to motorists on Lake Merced Boulevard (Photos 3

through 5) and to golfers on the Harding Park (Photos 6 and 7) through the chain link fencing that surrounds the site. Existing buildings located within the maintenance yard are depicted in Photo 8. As shown in Photos 3 through 7, trees and shrubs (in particular, the hedge shown in the lower right portion of Photo 3) within and outside the perimeter of the maintenance yard parking lot partially screen views from Lake Merced Boulevard and Harding Park.

3.3.2 Regulatory Framework

Federal

There are no applicable federal regulations related to aesthetics.

State

The California Department of Transportation (Caltrans) designates highways as scenic highways based on how much of the landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which views are compromised by development. Interstate 280 (I-280), located approximately 1 mile from the Project area, is the only state-designated scenic highway in the vicinity of the Project area. The Project area is not visible from I-280.

Local

City and County of San Francisco

Designated Roads

In 1938, San Francisco's Downtown Association created the 49-mile Scenic Drive to highlight San Francisco's beauty and to promote the city as a tourist destination (San Francisco, 2008). This scenic roadway encircles Lake Merced, and the adjacent portion of Lake Merced Boulevard is part of the designated scenic roadway. Although there are no associated plans or policies related to 49-mile Scenic Drive, these streets are recognized for their aesthetic value.

The Urban Design Element of the San Francisco General Plan, described below, rates city streets as "excellent," "good," or "average" for the quality of their views. Where the intensity of development is high, streets are sometimes necessary to maintain decent levels of light and air flow and quality, and the Urban Design Element designates roads that are important in this regard (CCSF, 1998). In the Project area, Lake Merced Boulevard rates as having average-quality street views, with the exception of a small segment north of Brotherhood Way, where open views of Lake Merced are available. This segment of Lake Merced Boulevard is designated as having excellent-quality street views.

The Urban Design Element also identifies streets that are important to the "perception" of San Francisco. A majority of San Francisco's streets have pleasing views of the bay, the ocean, distant hills, or other parts of San Francisco. However, where good views are not available, streets can still function as open space for use by neighborhood residents and for landscaping to bring a sense of nature to the area (CCSF, 1998). Lake Merced Boulevard is identified as "Streets

SOURCE: ESA and Carollo

Figure 3.3-1
Photograph Locations

Photo 1: Lake Merced Boulevard Looking South

Photo 2: John Muir Drive Looking South - Vista Grande Canal Staging Area Adjacent to Olympic Club

Photo 3: Lake Merced Boulevard Looking Northwest Toward Harding Park Maintenance Yard Parking Lot (Tank and Pump Station Site)

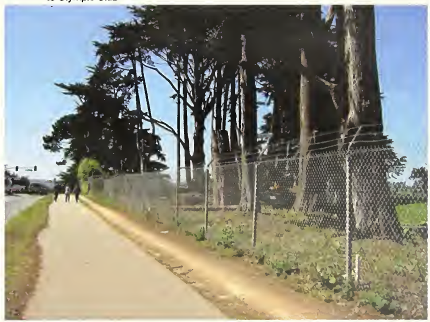


Photo 4: Lake Merced Boulevard Looking Southwest Toward Harding Park Maintenance Yard Parking Lot (Tank and Pump Station Site)

SOURCE: ESA

Figure 3.3-2a
Views of the Site and Surrounding Area

Photo 5: Lake Merced Boulevard Western Sidewalk Looking Southwest Toward Harding Park Maintenance Yard Parking Lot (Tank and Pump Station Site)

Photo 6: Harding Park Golf Course Looking East Toward Harding Park Maintenance Yard Parking Lot (Tank and Pump Station Site)

Photo 7: Harding Park Golf Course Looking Southeast Toward Harding Park Maintenance Yard Parking Lot (Tank and Pump Station Site)

Photo 8: Existing Facility at Harding Park Maintenance Yard

SOURCE: ESA

Harding Park Recycled Water EIR . 207704

Figure 3.3-2b
Views of the Site and Surrounding Area

that Extend[s] the Effect of Public Opens Space." In addition, as noted above, Lake Merced Boulevard is part of the 49-mile Scenic Drive.

City and County of San Francisco General Plan – Recreation and Open Space Element

The City and County of San Francisco General Plan (1988) has several objectives and policies pertaining to visual resources. The following policies are provided in the Recreation and Open Space Element and the Urban Design Element as they relate to the Project.

> *Policy 1.1*: Protect the natural character of regional open spaces and place high priority on acquiring open spaces noted for unique natural qualities.

> *Policy 2.13*: Preserve and protect significant natural resource areas.

City and County of San Francisco General Plan – Urban Design Element

> *Policy 1.1*: Recognize and protect major views in the city, with particular attention to those of open space and water.

> *Policy 3.4*: Promote building forms that will respect and improve the integrity of open spaces and other public areas.

The Harding Park maintenance yard is designated an Open Space Height and Bulk District (City of San Francisco, 2006). The Planning Code prescribes no height limits in Open Space Height and Bulk Districts; height and bulk are determined in accordance with the objectives and policies of the General Plan.

City of Daly City

Although not formally designated, the Daly City General Plan identifies roadways that have scenic quality, including roadways that contribute to the overall scenic quality of Daly City, or provide scenic views/vistas. Lake Merced Boulevard is identified as a roadway that provides scenic vistas.

The Daly City General Plan (1989) has several objectives and policies pertaining to visual resources. The following policies are provided in the Resource Management Element as they relate to the Project:

Daly City General Plan – Resource Management Element

> *Policy 7.1*: Areas designated as open space recreation-public shall continue to be maintained and upgraded by the City Parks and Recreation Department.

> *Policy 10.2*: Enact regulations for land uses adjacent to scenic corridors that minimize disruption of scenic corridors and enhance the aesthetic value of the corridor.

3.3.3 Impacts and Mitigation Measures

Significance Criteria

Daly City has not formally adopted significance standards for impacts related to aesthetics, but (consistent with Appendix G of the *CEQA Guidelines*) generally considers that implementation of the proposed Project would have a significant impact if it were to:

- Have a substantial adverse effect on a scenic vista
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
- Substantially degrade the existing visual character or quality of the site and its surroundings
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area

Approach to Analysis

The visual impact analysis is based on field observations of the Project area and surroundings conducted in July 2008, March 2009, and May 2009, in addition to a review of Project drawings and technical data supplied by Carollo Engineers, aerial and ground-level photographs of the Project area, and public planning documents. The analysis identifies potential temporary or permanent adverse visual impacts that the Project could have on scenic vistas, as seen from scenic highways and local scenic roads, or on other visual resources identified by local jurisdictions. The Project's ability to substantially degrade the visual character or quality of the surrounding area also was considered, as was the Project's potential to create a new source of light or glare.

Construction Impacts

Impact 3.3-1: Short-term visual impacts during construction. (Less than Significant with Mitigation)

The Project could result in temporary construction-related impacts on scenic views of Lake Merced Boulevard and adjacent areas, including Lake Merced and nearby roads used for construction staging. Pipeline construction, staging areas, and vehicles entering and exiting the Harding Park maintenance yard would be visible from adjacent residential land uses, vehicles along Lake Merced Boulevard and adjacent roadways, and Lake Merced and Harding Park recreation users. The appearance of the construction area and construction activities would contrast with the surrounding landscape and could obscure close range views of Lake Merced Boulevard and Lake Merced, identified as scenic resources in the Project area. The construction-related visual impacts would be temporary in nature. During construction of the pipeline and pump station, excavation trenching and the presence of work crews, heavy equipment, temporary fencing, and signage would temporarily degrade the visual character of the Project area. However, construction activities would be temporary as pipeline construction would occur over a six-month period, shifting locations during

that period (approximately 100-300 feet of the pipeline would be installed per day). Pump station construction would take place over a 12 to16-month period and staging areas that would be used throughout the Project construction phase. The extended presence (longer than one year) of construction equipment and activities in these areas would result in a significant aesthetic impact. Implementation of Mitigation Measure 3.3-1a would require that construction sites are maintained and kept clean, thereby reducing the visual intrusion of construction activities and equipment. An 8-foot high green screening fence will be installed around the perimeter of the Vista Grande Canal staging area at John Muir Drive to screen the visual intrusion of the construction material from public view. Implementation of Mitigation Measure 3.3-1b would minimize tree removal and require the contractor to avoid removing existing trees that would screen the proposed pump station (see Section 3.10, Biological Resources Impact 3.10-3 for further information regarding tree removal). With implementation of Mitigation Measure 3.3-1a and b the short-term visual impacts would be less than significant.

As discussed in Section 2.5 of the Project Description, construction areas would be restored to its original condition following completion of construction activities, with the exception of permanent changes associated with construction of the pump station (further discussed in Impact 3.3-2). Efforts will be made to protect the hedge along the fence outside of the Harding Park maintenance yard during construction. The hedge provides a visual screen of the maintenance yard and will serve that function during construction. If construction activity damages the hedge, it will be replaced. In addition, the proposed Project includes a screening fence at the Vista Grande Canal staging area to reduce the visual intrusion of construction activities on Olympic Golf Course recreation users.

Mitigation Measures

Measure 3.3-1a: For stationary (non-pipeline) project sites expected to be under construction or in use as a staging area for a period of one year or more, the contractor will ensure that construction-related activity is as clean and inconspicuous as practical by storing building materials and equipment within the proposed construction staging areas or in areas that are generally away from public view and by removing construction debris promptly at regular intervals. An 8-foot high green screening fence will be installed around the perimeter of the Vista Grande Canal staging area. Mitigation Measure 3.6-1 (see Section 3.6, Noise and Vibration) will require that a noise barrier be installed at the pump station and storage tank site. That measure would mitigate temporary visual impacts at the pump station and storage tank site, negating the need for Measure 3.3-1a at that location (as well as the need to preserve the hedge).

Measure 3.3-1b: Minimize tree removal: The contractor will minimize or avoid the removal of existing trees that would screen the proposed pump station. The contractor will consult with a qualified arborist regarding the minimum buffer zones required to prevent root damage to remaining trees and to provide SFPUC with any necessary maintenance requirements for remaining trees.

Impact Significance after Mitigation: Less than Significant

Operational Impacts

Impact 3.3-2: Long-term impact on scenic resources and the visual character of the Project area. (Less than Significant)

The proposed pump station would be sited in the northwest corner of the existing Harding Park maintenance yard (see Figure 2-2). The footprint of the pump station would be 24 feet by 19 feet. The total building height would be 16 feet, including a 4-foot high parapet wall along the four roof edges. The parapet wall would be required pursuant to SFPUC safety guidelines for roof structures that would be accessed during routine pump maintenance. A radio antenna would be mounted to the top of the pump station. The pump station would be a rectangular building constructed of concrete masonry units (CMU) with a recycled material content between 10 – 20 percent; the CMUs will be interspersed with glass blocks aligned to spell-out "H_2O" (the molecular formula for water) on the eastern wall.

Netting would be provided on metal or wood poles approximately 30 feet tall to protect parked cars and the maintenance staff in the Harding Park Golf Course maintenance yard parking lot from stray golf balls.

As described in Section 2.3.3, construction of the pump station would require removal of a maximum of 11 small-to-large-sized trees and some shrubs (see Figure 2-6). Trees to be removed are located primarily along the northwestern edge of the parking lot. As shown on Figure 2-7, SFPUC is proposing as part of the Project to replant trees and shrubs around the perimeter of the parking lot. Replacement trees will require approximately 10-15 years to mature, while shrubs would take less time (and would vary in height).

As shown in Figure 2-4, the hedge along Lake Merced Boulevard would be replaced if it is damaged during construction and would continue to screen views of the pump station site, as shown in Figure 3.3-2a, Photo 3. Trees removed in the north end of the parking lot would result in partial views of the new pump station from southbound motorists and pedestrians on Lake Merced Boulevard (Figure 3.3-2a, Photo 4; Figure 3.3-2b, Photo 5). Views of the Project site from southbound Lake Merced Boulevard would continue to be partially screened by existing security fencing, gates, and mature trees that would be retained adjacent to Lake Merced Boulevard. Due to intervening vegetation and fencing, the pump station would not be particularly noticeable from Lake Merced Boulevard during the 10-15 years between Project construction and maturation of landscape vegetation included as part of the Project. Upon maturation of proposed vegetation, views of the pump station from Lake Merced Boulevard would be substantially screened.

Trees removed in the north end of the Project site would result in partial views of the proposed pump station from Harding Park recreation users (Figure 3.3-2b, Photos 6 and 7) during the 10-15 years between Project construction and maturation of landscape vegetation included as part of the Project. Upon maturation of proposed vegetation, views of the pump station from Harding Park would be substantially screened.

The design character of the proposed pump station would integrate the new facility with the existing visual environment of the Project site. In addition, the proposed Project includes a landscaping plan that would result in new plantings that would screen views of the pump station from adjacent land uses. Therefore, the proposed Project would result in a less-than-significant, long-term effect on scenic resources and the visual character of the Project area.

Mitigation: None required.

Impact 3.3-3: New sources of light or glare. (Less than Significant with Mitigation)

The proposed Project would not include nighttime construction; however, security lighting may be utilized at proposed staging areas during a 12-16 month period and therefore, Project construction activities could result in light and glare effects as experienced from adjacent streets and residential uses. Implementation of Mitigation Measure 3.3-3a, which requires that lighting be oriented to ensure that no light source is directly visible from neighboring residential areas would reduce potential light and glare impacts to less than significant.

The proposed pump station would include exterior security lighting that could result in light and glare effects. In addition, if metal poles are used to support the proposed protective netting, glare effects could occur. It is expected that any light and glare effects would be experienced from adjacent streets and residential uses but is not expected from long range views due to the density of mature trees and development in the Project area. Implementation of Measure 3.3-3b, which requires that permanent fixtures will not use highly reflective building materials and landscaping will minimize offsite light and glare in surrounding areas would reduce potential light and glare impacts to less than significant.

Mitigation Measures

Measure 3.3-3a: The contractor will ensure that lighting used during any nighttime construction is directed downward and oriented such that no light source is directly visible from neighboring residential areas.

Measure 3.3-3b: The contractor will:

- Require full cutoff, low intensity light fixtures, with no light cast beyond the edge of the Project site as demonstrated by a photometric study of the proposed fixtures.
- Prevent use of highly reflective building materials and/or finishes in the designs for proposed structures, including fencing and light poles. In accordance with Measure 3.3-1b, above, landscaping will be provided around proposed facilities. This vegetation will be selected, placed, and maintained to minimize offsite light and glare in surrounding areas.

Impact Significance after Mitigation: Less than Significant.

3.3.4 References – Aesthetics

City of Daly City, City of Daly City General Plan: Resource Management Element, 1989.

City and County of San Francisco, San Francisco General Plan: Recreation and Open Space Element, 1988, as amended through 1996.

City and County of San Francisco, General Plan, Urban Design Element, 1998.

City of San Francisco. 2006. Height and Bulk Districts (Zoning Map of the City and County of San Francisco). Planning Department. Accessed at http://www.municode.com/Resources/gateway.asp?pid=14145&sid=5 on April 21, 2009

San Francisco Convention and Visitors Bureau, Official Visitors Website, San Francisco 49-mile Scenic Drive, http://www.onlyinsanfrancisco.com/maps/49miledrive.asp, accessed November 25, 2008.

3.4 Cultural Resources

The analysis considers direct and indirect impacts on both known cultural resources as well as inadvertent discoveries within the proposed Project location. Cultural resources include historic-period architectural/structural resources, archaeological resources, paleontological resources, and human remains. This section describes the cultural resources that might be present in the vicinity of the proposed Project, evaluates the potential impacts of the Project on those resources, and prescribes mitigation measures to reduce impacts to a less-than-significant level.

3.4.1 Setting

Area of Potential Effects

According to the San Francisco Public Utilities Commission (SFPUC) Water System Improvement Program (WSIP) Archaeological Guidance, the CEQA Area of Potential Effects (C-APE) for cultural resources is modeled after that of the federal APE at 36 CFR 800.16(d) and is defined as:

> …the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historical resources (i.e., California Register of Historical Resources-eligible resources), if any such properties exist. The C-APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking [SFPUC, 2008].

Architectural/Structural Resources

Potential impacts on architectural and structural resources are assessed by identifying the activities that could affect those architectural resources that are identified as historical resources for the purposes of CEQA (see Section 3.4.2, Regulatory Framework). Properties identified as historic resources under CEQA include those which are significant because of their association with important events, people, or styles (Criteria 1, 2, and 3). Once a resource has been identified as significant, it must be determined whether the impacts of the project would "cause a substantial adverse change in the significance" of the resource (CEQA Guidelines 15064.5[b]). A substantial adverse change in the significance of a historical resource means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired" (CEQA Guidelines Section 15064[b][1]). A historical resource is materially impaired through the demolition or alteration of the historical resource's physical characteristics that convey its historical significance and that justify its inclusion in the California Register (CEQA Guidelines Section 15064.5[b][2][A]).

Archaeological Resources

The significance of most prehistoric and historic-period archaeological sites is usually assessed under California Register Criterion 4. This criterion stresses the importance of the information potential contained within the site, rather than its significance as a surviving example of a type or its association with an important person or event. Archaeological resources may also be assessed

under CEQA as unique archaeological resources, that is an archaeological artifact, object, or site that contain information needed to answer important scientific research questions.

The C-APE includes all the areas, surface and subsurface, that could experience ground disturbance as a result of proposed project activities including locations of pipeline, water storage tank, and pump station construction as well as locations of staging areas. The horizontal and vertical C-APE corresponds to the maximum area of ground disturbance for each project component, outlined in **Table 3.4-1**.

TABLE 3.4-1
AREA OF POTENTIAL EFFECTS

Project Component	Length	Width	Depth
Pipeline Alignment	4,224 feet	1-1/2-foot trench + 20-foot work area	8 feet maximum
Reservoir and Pumping Station	100 feet + 40-foot work area	60 feet + 40-foot work area	30 feet
Irrigation System Control Pipeline	220 feet	1-foot trench + 20-foot work area	8 feet maximum
Pavement Replacement	220 feet	8 feet	N/A
Staging Area 1 – Vidal Drive	7,000 feet	20 feet	N/A – paved
Staging Area 2 – John Muir Drive	3,600 feet	950 feet	N/A – not paved

Paleontological Resources

Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites, and coral marine), and fossils of microscopic plants and animals (microfossils). Paleontological resources are distinct from archeological resources in that they record past plant and animal life, and not human history. Fossil discoveries provide paleontologists with valuable evidence to help them reconstruct biological and geological histories. In order for an organism to be preserved, it must be buried and mineralized, which requires a specific set of favorable geologic conditions and a significant amount of time. When fossils are discovered at the earth's surface, it is because the material in which the organism was fossilized has been eroded away by natural processes or exhumed by humans. The discussion of paleontological resources in this chapter refers to several geologic units that are also discussed in Section 3.11 - Geology and Soils and illustrated on Figure 3.11-1.

Background Context

Environment

The proposed Project is located across the San Francisco–San Mateo County line on the coastal side of the San Francisco peninsula, immediately east of Lake Merced. Elevations in the C-APE range from 33 feet just north of the intersection of John Muir Drive and Lake Merced Boulevard to 104 feet at Harding Park. The proposed pipeline alignment crosses several relict stream valleys

that drained into Lake Merced, but subsequent urbanization has resulted in the placement of artificial fills in the valleys.

The natural geology underlying the C-APE consists entirely of the Pleistocene-age (10,000 to 3.7 million years ago) Colma Formation. Thin layers of artificial fill overlay the Colma Formation in most places within the C-APE. As mentioned above, fill has been placed in relict stream valleys, most notably at Brotherhood Way, west of the San Francisco Golf Club, and just north of John Muir Drive. In those locations, artificial fills are very thick, exceeding 25 feet in places (Fugro West, 2008).

Prehistory

Categorizing prehistoric times into broad cultural stages allows researchers to describe a wide number of archaeological sites with similar cultural patterns and components during a given period of time, thereby creating a regional chronology. This section provides a brief discussion of the chronology for the project area.

A framework for the interpretation of the San Francisco Bay Area is provided by Milliken et al. (2007), who have divided human history in California into three broad periods: the Early Period, the Middle Period, and the Late Period. Economic patterns, stylistic aspects, and regional phases further subdivide cultural patterns into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods.

The Paleoindian period (11,500 to 8000 B.C.) was characterized by big-game hunters occupying broad geographic areas – evidence for this period has not yet been discovered in the San Francisco Bay vicinity. During the Early period, consisting of the *Early Holocene* (8000 to 3500 B.C.) and *Early Period* (3500 B.C. to 500 B.C.), geographic mobility continued and is characterized by the millingslab and handstone as well as large wide-stemmed and leaf-shaped projectile points. The first cut shell beads and the mortar and pestle are first documented in burials during this period, indicating the beginning of a shift to more sedentary settlement patterns. During the Middle period, which includes the *Lower Middle Period* (500 B.C. to A.D. 430) and *Upper Middle Period* (A.D. 430 to 1050), geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The first rich black middens are recorded from this period. The addition of milling tools, obsidian and chert concave-base points, and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse. By the Upper Middle Period, mobility was being replaced by the development of numerous small villages. Around A.D. 430 a "dramatic cultural disruption" occurred evidenced by the sudden collapse of the *Olivella* saucer bead trade network. During the Initial Late period (A.D. 1050 to 1550), social complexity developed toward lifeways of large, central villages with resident political leaders and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched points, and a diversity of beads and ornaments.

Ethnography

The C-APE is within the traditional territory of the Costanoan people, also referred to as Ohlone, Mutsun, and Rumsun (Levy, 1978:485–495). These people, collectively referred to by ethnographers as Costanoan, were actually distinct sociopolitical groups that spoke at least eight languages of the same Penutian language group. The Costanoan occupied a large territory from San Francisco Bay in the north to the Big Sur and Salinas Rivers in the south. The primary sociopolitical unit was the tribelet, or village community, which was overseen by one or more chiefs. The C-APE is in the greater *Ramaytush* language area (Levy, 1978:485).

Economically, the Costanoan engaged in hunting and gathering. Their territory encompassed both coastal and open valley environments that contained a wide variety of resources, including grass seeds, acorns, bulbs and tubers, bear, deer, elk, antelope, a variety of bird species, marine resources, and small mammals. The Costanoan acknowledged private ownership of goods and village ownership of rights to land and/or natural resources; they appear to have aggressively protected their village territories, requiring monetary payment for access rights in the form of clamshell beads, and even shooting trespassers if caught. After European contact, Costanoan society was severely disrupted by missionization, disease, and displacement.

History

The C-APE is located adjacent to Lake Merced, the largest freshwater lake in San Francisco. Historically, the lake was fed by rain water and seepage from historic springs and creeks. The following historic context is derived from Marcellino and Jebens (n.d.).

In 1777, Spanish explorers led by Don Fernando Rivera and Father Francisco Palou reportedly camped just north of where present-day Lake Merced Boulevard intersects the San Francisco–San Mateo County line (within the vicinity of the proposed project). The following year Father Palou returned and named the lake *La Laguna de Nuestra Señora de la Merced,* or The Lake of Our Lady of Mercy. The Mission Dolores of San Francisco used the lands around the lake for cattle grazing.

In 1835, a land grant of 2,200 acres, including the lake, was given to Jose Antonio Galindo who named it Laguna de la Merced. Two years later, Galindo sold the grant to Don Francisco de Haro for 100 cattle and $25.00 in goods. In 1835 de Haro had been elected San Francisco's (then Yerba Buena) first city mayor. He built a house at the southern end of the lake, but traveled between the lake house and other property he owned.

Lake Merced was also the location of the famous 1859 duel between Senator David Broderick and Associate Justice of the Supreme Court of California David Terry. The official duel site is located in a small gully just to the east of the southern tip of Lake Merced.

Being the closest freshwater source to the growing City of San Francisco, Lake Merced was one of the first places developed to meet the city's growing demand for water. The Spring Valley Water Company (SVWC) was incorporated in 1858 and soon the company formed a monopoly over San Francisco's water supply. In 1868 they bought the water rights to Lake Merced for

$150,000 and in 1877 the company began purchasing the watershed land around the lake. SVWC expansion and dominance over the San Francisco water supply continued throughout the remaining century and into the next. The Vista Grande tunnel was constructed in 1897 to route runoff from hog farms and sanitary sewage around the lake to the ocean.

In the 1910s and 1920s, SVWC continued to grow. By the 1920s, SVWC was the largest privately owned water utility in the United States. The development of San Francisco's municipal water system was prompted in part by the 1900 Charter, which called for the acquisition of private utilities. However, successive bond measures to purchase the company failed until 1928, which resulted in the purchase of the SVWC by San Francisco in 1930.

San Francisco city engineer M.M. O'Shaughnessy held the view that the large Lake Merced tract that included the golf courses in the vicinity of the Project was not an essential part of the proposed purchase of the SVWC. So, SVWC sold land to the golf clubs and residential developments, acting in its own economic interest. SVWC reserved certain groundwater rights (while allowing golf clubs to pump groundwater for use on their properties) and imposed covenants for the protection of Lake Merced in the deeds of sale. Lake Merced continued to supply San Francisco until at least 1930. Use was ceased with the import of Hetch Hetchy water in 1934 and the development of Sunset wellfield in the early 1930s.

Golf Course History

SVWC leased and then sold properties around Lake Merced as they became more valuable as property assets than as areas to protect the Lake Merced watershed; the lake had been demoted to providing only emergency supplies to SVWC's water delivery to San Francisco. Promoting the development of five golf courses on its land around Lake Merced during the early twentieth century, SVWC called the area a "the golfer's paradise" in 1923 for its location, terrain and weather. These courses included the Lake Merced Golf Course (now known as Harding Park Municipal Golf Course), the San Francisco Golf Course, and the Olympic Golf and Country Club. A brief history of each golf course in the project vicinity is described below.

San Francisco city leaders, including Herbert Fleishacker and William F. Humphrey, had the foresight to conceive of a municipal "green belt" around Lake Merced. A vital part of that vision was a championship golf course, which they originally named the "Lake Merced Municipal Golf Course." In 1923, Fleishacker and Humphrey, and their fellow members of the Board of Park Commissioners, made arrangements to lease 170 acres of land from SWVC, and construction of a new golf course soon followed (the lease arrangement was terminated in 1930 when San Francisco took over the water company and purchased the golf course land). The City of San Francisco retained Sam Whiting and Willie Watson, the two architects who collaborated at The Olympic Club, to design the new course and supervise its construction (see discussion below). The Lake Merced Golf Course was renamed the Harding Park Municipal Golf Course after former president and avid golfer, Warren G. Harding, who died in August 1923 while passing through San Francisco. The official opening day for Harding Park was July 18, 1925. Numerous changes to both its clubhouse and the configuration of its greens and tees have occurred over time. Due to the more

recent revisions to the club layout and design, the Harding Park Municipal Golf Course would not be considered a historical resource for the purposes of CEQA.

Located about 500 feet east of the C-APE is the San Francisco Golf Course. The golf club originally played on a nine-hole course at the Presidio. The club leased land from the SVWC in 1905 along Junipero Serra Boulevard adjacent to Ingleside for an 18-hole course. This initial course, which later became the California Golf Club was located opposite where Ingleside Terraces was to be built in the 1910s and 1920s. It extended south to the gulch where Brotherhood Way (formerly known as Stanley Drive) now runs, including land on which Parkmerced now sits. In 1915, SVWC decided not to further extend the golf club's lease at its Ingleside course and the club negotiated a lease for 146 acres further south on SVWC land the other side of the gulch where Brotherhood Way now runs. The club also purchased an additional four acres near the San Mateo County line for its new course. They renamed themselves the San Francisco Golf and Country Club and hired architect George W. Kelham to design its new clubhouse and A.W. Tillinghast to design the new golf course. The San Francisco Golf and Country Club purchased from SVWC the parcel on which their clubhouse now sits in 1916 and leased the remaining portion of the property. In 1920, the San Francisco Golf and Country Club learned that its SVWC lease was not going to be renewed and the membership decided to purchase the property from the water company, which included some land adjacent to the SVWC's Ocean View Pumphouse. The club completed the purchase of the property from SVWC in 1921 and purchased additional parcels from the water company in the late 1920s. The club changed its name back to the San Francisco Golf Club in 1927. A survey and evaluation of the San Francisco Golf Club for SFPUC's San Andreas Pipeline No. 3 Installation Project in 2008 concluded that the San Francisco Golf Club appears to meet the criteria for listing in the California Register of Historic Resources (CRHR) and National Register of Historic Places (NRHP) and should be considered a historical resource for the purposes of CEQA (JRP, 2008).

The Olympic Club was founded in San Francisco in 1860 as a private boxing club. In 1918, the club took over the Lakeside Golf Club, which had just opened in 1917 on the shores of Lake Merced. Lakeside had one 18-hole golf course designed by Wilfrid Reid, but following additional land purchases the club decided to replace it with two courses (the Lake and Ocean courses). The Olympic Club's Lake Course is just west of the C-APE, while its Ocean Course is located some distance south along the Pacific Ocean off Skyline Boulevard (State Route 35). Both courses were designed by Willie Watson, a well-known Scottish architect, and both opened in 1924. In 1953, the Lake course was modified by Robert Trent Jones in preparation for the 1955 U.S. Open golf tournament and redesigned by Tom Weiskopf in 2000. Due to the more recent revisions to the club layout and design, the Olympic Club Lakeside Golf Club would not be considered a historical resource for the purposes of CEQA.

Architectural/Structural Resources

There are no recorded architectural/structural resources within the C-APE. One recorded resource outside of, but adjacent to, the C-APE at 991 Lake Merced Boulevard (the former 1923 watershed keeper's dwelling at the SFPUC Lake Merced Pumping Station) was listed as ineligible for the

National or State Registers due to a lack of historical or architectural importance (William Self, 2006). The residential subdivisions outside of, but adjacent to, the C-APE such as those along Westpark Drive just southeast of Lake Merced Boulevard, were constructed in the mid-to-late 1960s. The apartments along South Lake Merced Hills Drive, to the east of the C-APE, were built in the mid-1970s. Due to their relatively recent dates of construction and their common and repetitive architectural forms, these nearby residential developments would not qualify for listing under federal, state, or local registers either individually or as a potential district. Of the three golf courses in the vicinity of the C-APE, only the San Francisco Golf Club would be considered an historical resource for CEQA purposes, as described above. This course is located about 500 feet east from the C-APE. Finally, no architectural/structural resources are located on or near the proposed staging area along John Muir Drive.

Archaeological Resources

Records Search Information and Records Search Area

A records search was conducted for the proposed Project at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS) on September 24, 2008 (File No. 08-0382). The purpose of the records search was to (1) determine whether known cultural resources have been recorded within or adjacent to the C-APE; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and preliminary evaluation of cultural resources.

Records Search and Literature Findings

No archaeological resources are located within the C-APE and no previous cultural resources studies have been completed in the C-APE.

The nearest prehistoric site is the Lake Merced Site, a prehistoric midden, located approximately 0.7 mile north of the C-APE on the northern arm of Lake Merced; and CA-SFR-106, located 0.75 mile west of the C-APE at Fort Funston.

The area within the C-APE was once part of the Rancho de la Laguna Merced and later the Rancho DeHaro. Historic-period maps indicate that the C-APE was once near to the Andrews and DeHaro adobes, both constructed in 1846 (Hendry and Bowman, 1940); however, the General Land Office/Rancho plats give no indication that any buildings or structures were located within the C-APE. Early Sanborn maps (1886, 1899, 1913) show the C-APE as "Lands of the Spring Valley Water Company."

Field Methods

A Registered Professional Archaeologist surveyed the C-APE on April 1 and April 26, 2009. The majority of the Project components will be installed beneath existing pavement; therefore, natural ground surface in the C-APE is not visible. The construction staging area on the south side of John Muir Boulevard was walked in transects spaced at 50 feet; all rodent holes were examined

for any evidence of cultural materials. Visibility at the staging was excellent. The ground had been previously graded for use as a staging area. No archaeological resources were recorded during the survey effort.

Summary

No cultural resources were recorded within the C-APE for the proposed Project. The C-APE is located in an area mapped as Pleistocene-age Colma Formation. This geologic formation has a low potential for containing buried prehistoric archaeological resources (Meyer and Rosenthal, 2007).

Paleontological Resources

The following discussion of existing paleontological resources divides the rock units underlying the Project area into geologic units with varying degrees of fossil-yielding potential. High and low potential rocks are determined by applying the following criteria established by the Society of Vertebrate Paleontology (SVP, 1995):

> High Potential – Rock units (or formations) in which vertebrate or significant invertebrate fossils have been found. These rock units include sedimentary and some volcanic formations that contain significant fossil resources anywhere within their geographic extent and sedimentary deposits formed in a time period or composed of materials suitable for the preservation of fossils. Only invertebrate fossils that provide new information on existing flora or fauna, or on the age of a rock unit would be considered significant.
>
> Low Potential – Rock units that have few, if any records of vertebrate fossil finds in institutional collections, or that have been shown in surveys or paleontological literature to be largely absent of fossil resources. Low potential rocks also include metamorphic and most volcanic rocks.

Although not discussed in SVP standards, artificial fills, slope deposits (such as colluvium, landslides and earth flows) and native soil are materials with little or no potential to contain paleontological resources. While such materials were originally derived from rocks or sediments, they have been weathered or reworked such that fossils would not likely be preserved.

All of the rocks underlying the project are considered rock units of low paleontological potential. The proposed Project is directly underlain by artificial fills (identified as *Qaf* in Figure 3.11-1) and the Pleistocene-age (10,000 to 1.8 million years ago) Colma Formation (identified as *Qc* in Figure 3.11-1). Artificial fills have a low paleontological potential for the reasons described above, and the Colma Formation has a low paleontological potential because it has not yielded vertebrate fossils in the past, as reflected in the lack of vertebrate specimens from the unit in institutional collections (University of California, 2009). The Colma Formation has yielded a few invertebrate fossils, though such fossils are abundant in similar geologic deposits and there are thick sequences of the Colma Formation exposed along coastal bluffs in the vicinity that have been extensively examined in the context of the fossil record. Any invertebrate fossils found in the Colma Formation underlying the site would not likely provide new information on existing flora or fauna, or on the age of the rock unit, thus satisfying SVP criteria for low potential rock units.

3.4.2 Regulatory Framework

Federal

Archaeological resources are protected through the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470f), and its implementing regulations. Prior to implementing an "undertaking" (e.g., issuing a federal permit), Section 106 of the NHPA requires federal agencies to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing in the National Register of Historic Places. Under the NHPA, a find is considered significant if it meets the National Register listing criteria at 36 CFR 60.4, as stated below:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and
>
> a) That are associated with events that have made a significant contribution to the broad patterns of our history, or
>
> b) That are associated with the lives of persons significant in our past, or
>
> c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction, or
>
> d) That have yielded, or may be likely to yield, information important in prehistory or history.

Federal review of projects is normally referred to as the Section 106 process. This process is the responsibility of the federal lead agency. The Section 106 review normally involves a four-step procedure, which is described in detail in the implementing regulations (36 CFR Part 800):

- Identify historic properties in consultation with the State Historic Preservation Officer and interested parties;
- Assess the effects of the undertaking on historic properties;
- Consult with the State Historic Preservation Officer, other agencies, and interested parties to develop an agreement that addresses the treatment of historic properties and notify the Advisory Council on Historic Preservation; and
- Proceed with the project according to the conditions of the agreement.

State

The State of California implements the NHPA of 1966, as amended, through its statewide comprehensive cultural resource surveys and preservation programs. The California Office of

Historic Preservation (OHP), as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historic Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the state's jurisdictions.

California Environmental Quality Act

CEQA, as codified at California Public Resources Code [PRC] Sections 21000 et seq., is the principal statute governing the environmental review of projects in the state. CEQA requires lead agencies to determine if a proposed project would have a significant effect on archaeological resources. As defined in PRC Section 21083.2, a "unique" archaeological resource is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it:

- Contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information;
- Has a special and particular quality, such as being the oldest of its type or the best available example of its type; and/or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

The CEQA Guidelines define a historical resource as: (1) a resource in the California Register; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and CEQA Guidelines Section 15064.5 would apply. If an archaeological site does not meet the CEQA Guidelines criteria for a historical resource, then the site may meet the threshold of PRC Section 21083 regarding unique archaeological resources. A unique archaeological resource is "an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge."

The CEQA Guidelines note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of the project on that resource will not be considered a significant effect on the environment (CEQA Guidelines Section 15064[c][4]).

California Register of Historical Resources

The California Register of Historical Resources is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources

of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for eligibility to the California Register are based on National Register criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally eligible for or listed in the National Register.

To be eligible for the California Register as a historical resource, a prehistoric or historic-period resource must be significant at the local, state, and/or federal level under one or more of the following criteria:

1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2) Is associated with the lives of persons important in our past;

3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or,

4) Has yielded, or may be likely to yield, information important in prehistory or history [14 CCR Section 4852(b)].

For a resource to be eligible for the California Register, it must also retain enough integrity to be recognizable as a historical resource and to convey its significance. A resource that does not retain sufficient integrity to meet the National Register criteria may still be eligible for listing in the California Register.

Local

San Francisco Planning Code, Articles 10 and 11

The OHP has included the City and County of San Francisco (CCSF) on its list of Certified Local Governments, which means that the CCSF has an approved historic preservation ordinance, Landmarks Preservation Advisory Board, and other formal processes related to historic preservation and cultural resources management. The CCSF reviews the historical resources designated under Articles 10 and 11 of the San Francisco Planning Code when it evaluates impacts on historical resources (see Section 5.4.3.1, Significance Criteria). Article 10 describes procedures regarding the preservation of sites and areas of special character or special historical, architectural, or aesthetic interest or value, such as officially designated city landmarks and buildings included within locally designated historic districts. Article 11 of the Planning Code designated six downtown conservation districts. The proposed Project C-APE is not located within or near any historical resources designated under Articles 10 and 11 of the Planning Code.

Daly City General Plan Goals and Policies

Daly City's Resource Management Element, adopted in April 1989, includes the following objectives and policies regarding cultural resources:

Objective 13: Preserve community character

Policy 13.1: Incorporate design features in new development that reflect the character of the neighborhood, to ensure that new construction is compatible with existing development.

Policy 13.2: Create a Design Review Committee to function as an independent body to review building design and architectural compatibility.

Objective 14: Identify and preserve sites of historical and archaeological significance

Policy 14.1: Identify properties eligible for inclusion in the National Register of Historic Properties.

Policy 14.2: An archaeologist shall be consulted if evidence of significant archaeological artifacts are uncovered during new construction.

3.4.3 Impacts and Mitigation Measures

Significance Criteria

Daly City has not formally adopted significance standards for impacts related to cultural resources, but (consistent with Appendix G of the *CEQA Guidelines*) generally considers that implementation of the proposed project would have a significant impact if it were to:

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5
- Directly of indirectly destroy a unique paleontological resource or site or unique geologic feature
- Disturb any human remains, including those interred outside of formal cemeteries

Approach to Analysis

A records search was conducted for the proposed Project at the Northwest Information Center (NWIC) of the California Historical Resources Information System. The purpose of the records search was to (1) determine whether known cultural resources have been recorded within or adjacent to the APE; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and preliminary evaluation of cultural resources.

A Registered Professional Archaeologist surveyed the C-APE on April 1 and April 26, 2009. The majority of the project components would be installed beneath existing pavement; therefore there was no ground surface visibility. The staging area on the south side of John Muir Drive was walked in transects spaced 50 feet; all rodent holes were examined for any evidence of cultural materials.

As no architectural/structural resources listed in or eligible for listing in the federal, state, or local registers are located within the C-APE, the proposed Project would have no direct or indirect impacts on architectural or structural resources under CEQA Section 15064.5. The proposed Project would be constructed entirely within the right-of-way of Lake Merced Boulevard, with no direct or indirect impacts to architectural/structural resources anticipated. No mitigation would be required. Operation of the proposed Project includes maintenance of the facilities. These activities do not include addition of new facilities adjacent to structures and do not include excavation that could encounter buried cultural or paleontological resources. Thus, there is no further consideration of operational impacts to cultural resources.

Construction Impacts

Impact 3.4-1: Inadvertent discovery of archaeological resources and human remains. (Less than Significant with Mitigation)

No archaeological resources were recorded within the C-APE for the proposed Project. The C-APE is located in an area mapped as Pleistocene-age Colma Formation. This geologic formation has a low potential for containing buried prehistoric archaeological resources (Meyer and Rosenthal, 2007). There is a low potential for uncovering unknown archaeological resources during proposed Project implementation, however the possibility of discovery still remains, which would be a potentially significant impact. Therefore, in the event that cultural resources and/or human remains are discovered during construction, Standard Archaeological Mitigation Measures I and II from the WSIP PEIR would apply (San Francisco Planning Department, 2008b).

Mitigation Measures

Measure 3.4-1: ***Accidental Discovery Measures.***[1] To avoid any potential adverse effect from the proposed project on accidentally discovered buried cultural resources as defined in CEQA Guidelines Section 15064.5(a)(c), the SFPUC will distribute the Planning Department's archaeological resource "ALERT" sheet to the project prime contractor; to any project subcontractor firms (including demolition, excavation, grading, foundation, pile driving, etc.); and/or to utilities firm involved in soil-disturbing activities within the project site. Prior to any soils-disturbing activities being undertaken, each contractor is responsible for ensuring that the "ALERT" sheet is circulated to all field personnel including, machine operators, field crew, pile drivers, supervisory personnel, etc. The SFPUC will provide the Environmental Review Officer (ERO) with a signed affidavit from the responsible parties (prime contractor, subcontractor(s), and utilities firm) confirming that all field personnel have received copies of the "ALERT" sheet.

If the ERO determines that an archaeological resource may be present within the proposed Project site, the SFPUC will retain the services of a qualified archaeological consultant. The archaeological consultant will advise the ERO as to whether the discovery is an archaeological resource that retains sufficient integrity and is of potential scientific/historical/cultural significance. If an archaeological resource is present, the

[1] WSIP Mitigation Measure 4.7-2b: Accidental Discovery Measures

archaeological consultant will identify and evaluate the archaeological resource. The archaeological consultant will make a recommendation as to what action, if any, is warranted. Based on this information, the ERO may require, if warranted, specific additional measures to be implemented by the SFPUC.

Measures might include: preservation in situ of the archaeological resource; an archaeological monitoring program; or an archaeological evaluation program. If an archaeological monitoring program or archaeological testing program is required, it will be consistent with the MEA WSIP Archaeological Guidance (San Francisco Planning Department, 2008) for such programs. The ERO may also require that the SFPUC immediately implement a site security program if the archaeological resource is at risk from vandalism, looting, or other damaging actions.

The proposed Project archaeological consultant will submit an accidental discovery Archaeological Data Recovery Report (ADRR) to the ERO which, in addition to the usual contents of the ADRR, includes an evaluation of the historical significance of any discovered archaeological resource, as well as describing the archaeological and historical research methods employed in the archaeological monitoring/data recovery program(s) undertaken, and presenting, analyzing, and interpreting the recovered data. Information that may put at risk any archaeological resource will be provided in a separate removable insert within the final report.

Once approved by the ERO, copies of the ADRR will be distributed as follows: the relevant California Historical Resources Information System Information Center will receive one (1) copy and the ERO will receive a copy of the transmittal letter of the ADRR to the Information Center. The MEA will receive three copies of the ADRR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. The SFPUC will receive copies of the ADRR in the number requested. In instances of high public interest in or the high interpretive value of the resource, the ERO may require a different final report content, format, and distribution than that presented above.

Human Remains and Associated or Unassociated Funerary Objects.[2] The treatment of human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity will comply with applicable State laws. This will include immediate notification of the coroner of the county within which the project is located and, in the event of the coroner's determination that the human remains are Native American, notification of the California State Native American Heritage Commission (NAHC), who will appoint a Most Likely Descendant (MLD) (PRC Section 5097.98). The archaeological consultant, SFPUC and MLD will make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. California Public Resources Code allows 24 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the reburial method, the Project will follow Section 5097.98(b) of the California Public Resources Code, which

2 From WSIP Mitigation Measure 4.7-2a: Human Remains and Associated or Unassociated Funerary Objects.

states that "the landowner or his or her authorized representative will reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."

Impact Significance after Mitigation: Less than Significant.

Impact 3.4-2: Inadvertent discovery of paleontological resources. (Less than Significant with Mitigation)

As discussed in the Setting section, there are no known fossil sites in the proposed Project area, and the geologic units underlying the site have low potential to yield significant (vertebrate) paleontological resources. Excavations for the proposed Project would involve open trench cut and cover methods of excavation that would disturb the ground surface along the pipeline alignment to a maximum depth of approximately 5 feet. Such activities would likely excavate or otherwise disturb both existing artificial fill material and underlying undisturbed Colma Formation – both of which are unlikely to yield fossil resources. However, because it has not been proven that significant fossil resources do not occur within the subsurface geology of the site, disturbance or destruction of a paleontological resource is a potentially significant impact of the project. However, Mitigation Measure 3.4-2 would avoid disturbance or destruction of accidentally discovered fossil resources by halting work and salvaging the find, if appropriate.

Mitigation Measures

Measure 3.4-2: ***Halt Work if Paleontological Resources are Identified During Construction.***[3] Construction work should be suspended immediately if there is any indication of a paleontological resource. When a paleontological resource (fossilized invertebrate, vertebrate, plant or micro-fossil) is discovered at any of the project sites, an appointed representative of the SFPUC will notify a qualified paleontologist, who will document the discovery as needed, evaluate the potential resource, and assess the significance of the find. When a fossil is found during construction, excavations within 50 feet of the find will be temporarily halted or diverted until the discovery is examined by a qualified paleontologist, in accordance with Society of Vertebrate Paleontology standards (SVP 1995, 1996). The paleontologist will notify the SFPUC to determine procedures to be followed before construction is allowed to resume at the location of the find. If the SFPUC determines that avoidance is not feasible, the paleontologist will prepare an excavation plan for mitigating the effects of the project.

Impact Significance after Mitigation: Less than Significant.

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[3] WSIP Mitigation Measure 4.7-1: Suspend Construction Work if Paleontological Resource is Identified.

3.4.4 References – Cultural Resources

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3.5 Transportation and Traffic

This section addresses potential impacts on transportation and traffic related to construction and operation of the proposed Project. This evaluation is based on the following:

- Field reconnaissance March 2009 to determine the characteristics of roads that are proposed to accommodate construction-generated vehicle trips, including the number of travel lanes, traffic control, on-street parking (permitted or prohibited), bicycle routes, transit service (including bus stops), and land uses served by the affected roads (e.g., sensitive uses like fire stations, schools, etc.).

- Traffic volume counts obtained from California Department of Transportation (Caltrans) on key local roads (i.e., Lake Merced Boulevard, Brotherhood Way, and Higuera Avenue) and on key regional highways (i.e., State Route 1, Interstate 280 and State Route 35).

- Estimated vehicle trips that Project-related activities would generate during each construction phase, on both a daily and peak hourly basis.

3.5.1 Setting

The Project area for pipeline construction includes Lake Merced Boulevard between the point of connection south of the intersection with John Muir Drive and the northern limits of construction at the intersection with Higuera Avenue. The Project area for construction of the storage tank and pump station includes the Harding Park maintenance yard. Areas outside Lake Merced Boulevard and the maintenance yard would also be affected by construction of the proposed Project. These areas include proposed construction staging on Vidal Drive, and proposed construction staging on an SFPUC-owned parcel on the west side of John Muir Drive. The roadway network that would be used for access for construction workers and construction vehicles (including trucks that would transport construction materials, excavated spoils, and fill materials to and from the work zone) consists of regional highways and local roadways. See Figures 2-1 and 2-2 in Chapter 2 for locations of regional highways and local roadways in the Project area.

Existing Traffic Circulation Network

Regional Access

Regional access to the Project area is provided by State Route 1 (SR 1) and Interstate 280 (I-280) (see Figure 2-1). SR 1 is a two-lane highway, with ramps to and from Brotherhood Way. I-280 is an eight-lane, north-south freeway with an interchange at 19th Avenue/SR 1 and John Daly Boulevard. State Route 35 is a two-lane highway that merges with Skyline Boulevard throughout Daly City. It borders the western edge of Lake Merced before merging with Sloat Boulevard in San Francisco.

The most recent data published by the California Department of Transportation (Caltrans) indicates that average daily traffic volumes on freeways near the Project site range between 106,000 and 135,000 vehicles; trucks comprise less than two percent of the daily traffic volume

on both freeways (Caltrans, 2008a). **Table 3.5-1** presents the average daily traffic volumes and truck percentages for the regional transportation facilities in the Project area.

TABLE 3.5-1
DAILY TRAFFIC VOLUMES ON REGIONAL ROADWAYS IN PROJECT VICINITY

Regional Roadways	Location	Daily Traffic (Vehicles Per Day)	Trucks (as percentage of daily traffic)
State Route 1	South of Brotherhood Way	115,000	Less than 2%
State Route 1	North of Brotherhood Way	106,000	Less than 2%
I-280	At San Mateo/San Francisco county line	138,000	Less than 2%
State Route 35	At junction with State Route 1	25,000	Less than 2%

SOURCE: Caltrans, 2008a

Local Roadways

This section describes local roadways in the Project vicinity; refer to Figure 2-2 for roadway locations. **Table 3.5-2** presents a summary of roadway characteristics in the Project area. The proposed pipeline alignment is in Lake Merced Boulevard and traverses four "T" intersections at John Muir Drive in Daly City; and North Lake Merced Hills Drive, Brotherhood Way, and Higuera Avenue in San Francisco.

TABLE 3.5-2
CHARACTERISTICS OF ROADWAYS IN PROJECT AREA

Street Name	Jurisdiction	Number of Lanes	Daily Traffic Volumes (vehicles per day)	Bike Facilities	Sidewalks	On-Street Parking	Public Transit
Lake Merced Blvd	Daly City / San Francisco	4 (divided)	32,000	I[1], II[2] III[3]	Yes	No[5]	SamTrans 122 Muni 18, 88 (BART shuttle)
John Muir Drive	Daly City / San Francisco	2	NA[4]	I	Yes	Yes	Muni 18, 88 SamTrans 122
North Lake Merced Hills Drive	San Francisco	2	NA	NA	Yes	No	NA
Brotherhood Way	San Francisco	4 (divided)	31,000	NA	Yes	No	Muni 88
Higuera Avenue	San Francisco	2	1,200	NA	Yes	Yes	Muni 18, 88 SamTrans 122

1 class I bikeway
2 class II bikeway
3 class III bikeway
4 NA: not available
5 On-street parking permitted north of Higuera Avenue (outside the project corridor)

SOURCES: Traffic volume data – Caltrans 2008b; San Francisco Municipal Transportation Agency (SFMTA), 2008
Transit Information – SamTrans, 2009; SFMTA, 2009
Bicycle Facilities – San Francisco, 2008; Daly City, 2004

Lake Merced Boulevard is a four-lane divided roadway with pavement width that varies from approximately 21 to 23 feet on each side of the raised 15-foot wide landscaped median, from Sloat Boulevard to the intersection of John Muir Drive. This portion has sidewalks on both sides and partial bike lanes. From the intersection to its terminus at John Daly Boulevard there is no landscaped median and there is a sidewalk only on the east side. On-street parking is not permitted.

John Muir Drive is a two-lane, generally north-south roadway. John Muir Drive has a sidewalk on the east side of the street. On-street parking is permitted. At the intersection of John Muir Drive/Lake Merced Boulevard there are exclusive left-turn and right-turn lanes onto Lake Merced Boulevard.

North Lake Merced Hills Drive is a minor, two-lane roadway, providing access to the Lake Merced Hills residential area. Lake Merced Hills Drive has a sidewalk on the south side of the street. On-street parking is not permitted.

Brotherhood Way is a four-lane, east-west secondary arterial divided by a 15-foot-wide landscaped median strip. Brotherhood Way has wide unpaved walkways on both sides of the street along most of its length. On-street parking is not permitted. At the intersection of Brotherhood Way/Lake Merced Boulevard there are exclusive left-turn and right-turn lanes onto Lake Merced Boulevard.

Higuera Avenue is a two-lane divided, east-west roadway with sidewalks on both sides of the street. Parking in designated pull-out areas is permitted.

Transit Service

Transit service in the Project area is provided by SamTrans, BART, and San Francisco Municipal Railway (MUNI), which operates bus and light rail service in San Francisco. SamTrans operates one bus (Route 122) along Lake Merced Boulevard. MUNI operates two buses (Routes 18 and 88) along Lake Merced Boulevard, with connections to the nearby BART station at Daly City providing regional access (SFMTA, 2009; SamTrans, 2009). Table 3.5-2 indicates the Project area roadways served by the bus lines, which are further described below.

Route 18 provides service between northwest San Francisco (the Richmond, Laurel Heights, the Presidio), southwest San Francisco (Lake Merced) and western San Francisco (the Sunset, Parkside, Forest Hill). Route 18 operates with 15 to 20-minute headways (5:34 a.m. to 12:21 a.m.) on weekdays. On weekends, service is provided from 6:20 a.m. to 12:21 a.m. with 20-minute headways. Route 18 operates on Lake Merced Boulevard and John Muir Drive in the Project area.

Route 88 (BART Shuttle), provides service between Mission (the Mission, Bernal Heights, Excelsior, Ingleside), and southwest San Francisco (Lake Merced). Route 88 operates with 20-minute headways (6:30 a.m. to 8:39 a.m.) and with 10-minute headways (4:05 p.m. and 6:30 p.m.) (weekdays only). Route 88 operates on Lake Merced Boulevard, John Muir Drive, and Brotherhood Way in the Project area.

Route 122 (SamTrans bus) serves South San Francisco BART, Arroyo/El Camino, Westborough, King Plaza, Serramonte, Serra Center, Colma BART, Seton Medical Center, Westlake, San Francisco State University, and Stonestown. Route 122 operates with 15 to 30-minute headways (6:07 a.m. to 10:04 p.m.) on weekdays. On weekends, service is provided from 8:35 a.m. to 6:55 p.m. with 30-minute headways. Route 122 operates on Lake Merced Boulevard in the Project area.

Bikeways/Pedestrian Circulation

Bikeways are typically classified as Class I, Class II, or Class III facilities as defined by the State of California in the California Streets and Highway Code Section, 890.4. Class I bikeways are bike paths with exclusive right-of-way for use by bicyclists or pedestrians. Class II bikeways are bike lanes striped with the paved areas of roadways and established for the preferential use of bicycles, while Class III bikeways are signed bike routes that allow bicycles to share streets or sidewalks with vehicles or pedestrians. Table 3.5-2 indicates the Project area roadways that have bikeways.

The proposed Project alignment along Lake Merced Boulevard parallels a Class I bicycle route (Lake Merced multi-use sidewalk/pathway), a Class II bicycled route (south of John Muir Drive) and a Class III bicycle route (an on-street, wide lane bicycle route) (San Francisco, 2008). Though not formally designated, a portion of the southern pipeline alignment would occur along a bike lane striped within the paved right-of-way, located on the east edge of the pavement and terminating at the intersection with John Muir Drive. The San Francisco Bicycle Plan (2008) includes a proposal to construct Class II bicycle lanes on John Muir Drive at the south end of Lake Merced between Lake Merced Boulevard and Skyline Boulevard.

Pedestrian facilities (e.g., sidewalks, edge-of-road paths) in the Project vicinity include the Lake Merced Perimeter Trail and paved and unpaved paths along the east side of Lake Merced Boulevard. The Lake Merced Perimeter Trail is a 4.5-mile, multi-use sidewalk/pathway loop around Lake Merced, which parallels the Lake Merced Boulevard pipeline alignment. Pedestrians use the sidewalk/pathway along Lake Merced where pedestrian flows (e.g., bicycling, jogging, dog walking etc.) occur. While there is consistent use of this sidewalk/pathway, the predominant travel mode in this area is by automobile.

Refer to Section 3.8, Recreation, for additional information on bicycles routes.

Traffic Volumes

The theoretical daily carrying capacity (i.e., the highest traffic volume that can travel on a roadway in a day) ranges up to about 15,000 vehicles (for a two-lane road), about 25,000 vehicles (for a four-lane undivided road), and about 30,000 vehicles (for a four-lane divided road). The theoretical peak hour capacity is generally 10 percent of the daily capacity. As seen in Table 3.5-2, Lake Merced Boulevard and Brotherhood Way both currently carry more traffic than their theoretical capacity, 32,000 and 31,000, respectively. For all other streets listed in Table 3.5-2, traffic counts were not available, or the streets carried traffic volumes that are lower than their theoretical capacities.

Parking Conditions

Table 3.5-2 indicates whether on-street parking is provided on roadways that would be affected by the proposed pipeline construction activities. On-street parking is permitted on portions of Lake Merced Boulevard, north of Higuera Avenue; no on-street parking is available on Lake Merced Boulevard within the project corridor. Several local-serving arterials provide on-street parking. Additionally, the Lake Merced parking lot near the intersection of Brotherhood Way and Lake Merced Boulevard provides parking spaces for Lake Merced visitors. In the vicinity of the Project area, at Brotherhood Way and Higuera Avenue, numerous private off-street parking areas serve adjacent residential areas.

3.5.2 Regulatory Framework

Federal

There are no applicable federal regulations for this section.

State

Transportation analysis in California is guided by policies and standards set at the state level by Caltrans as well as those set by local jurisdictions.

Both Caltrans and local jurisdictions generally assess the impact of long-term, not short-term, traffic conditions. Plans and policies related to transportation seek to plan for and accommodate future growth and the vehicular, transit, pedestrian, and bicycle demand associated with that growth.

Local

Policies regarding traffic level of service (LOS)[1] on roadways for the Daly City and San Francisco apply to long-term, not short-term, traffic conditions. These policies specify maintaining an LOS of C or LOS D on major streets during peak traffic flow periods and require mitigation measures when Project-specific impacts result in an LOS exceeding the threshold. Policies regarding short-term, traffic conditions for Daly City and San Francisco are summarized below.

Daly City

For any work within a Daly City right-of-way, an encroachment permit must be filed with the Daly City Department of Public Works - Engineering Division. The Daly City Municipal Code specifies that construction equipment placed within the public right-of-way should not occupy more than eight feet of the travel way of the street that is immediately adjacent to the curb nearest the Project line and not more than one-half of the width of the sidewalk. After excavation work,

1 Level of service (LOS) is a qualitative description of a facility's performance based on average delay per vehicle, vehicle density, or volume-to-capacity ratios. Levels of service range from LOS A, which indicates free-flow or excellent conditions to short delays, to LOS F, which indicates congested or overloaded conditions with extremely long delays.

the Department of Public Works examines the construction areas to make sure that the street has been restored before the Department issues a certificate of approval (City of Daly City, 2009a).

The permit to work within the Daly City street right-of-way states that adequate provisions should be made to protect the traveling public. Warning signs, lights, and safety devices and other measures required for the public safety should conform to the requirements of the *Manual of Traffic Controls* issued by Caltrans Traffic Control Systems. All traffic control plans, including lane closure charts, should be reviewed and approved by the City before they are implemented. There should not be traffic interruptions between 4:00 p.m. and 9:00 a.m. and during weekends. During construction operation, at least one lane of traffic in each direction should be left open at all times.

The permit also specifies that flagging procedures should conform to the instructions in the *Manual of Traffic Control for Construction and Maintenance Work Areas* issued by Caltrans. It also states that the "no parking" signs must be posted at least 48-hours in advance of the effective time (City of Daly City, 2009b).

San Francisco

The San Francisco Municipal Transportation Agency (SFMTA) requires compliance with *The Blue Book* (SFMTA, 2006), a manual of procedures for construction projects affecting traffic and parking in San Francisco. Its purpose is to establish rules so that work can be done safely and with the least interference with vehicular traffic. The manual states that all control, warning lights/illuminations, and flashing arrow signs must conform to the Caltrans *Manual on Uniform Traffic Control Devices*.

The SFMTA also requires that contractors properly plan and maintain traffic control devices when closing a traffic lane. A minimum number of through lanes should be maintained, based on the existing number of through lanes. For two-way streets, each direction should be considered. The minimum width of a traffic lane and a temporary traffic lane is 10 feet clear of any obstructions, including traffic cones or delineators. If construction occurs within 100 feet of a two-way intersection and requires prohibiting left turns, or cannot otherwise comply with the City's traffic regulations, the SFMTA requires the contractor to apply for a Special Traffic Permit at the affected intersection.

3.5.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this EIR and consistent with Appendix G of the *CEQA Guidelines*, a project that would cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system is considered to have a significant impact on the environment. The project is also considered to have a potentially significant impact if:

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).

- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways.
- Result in a change in air traffic patterns, including either an increase in traffic levels, an obstruction to flight, or a change in location, that results in substantial safety risks.
- Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment).
- Result in inadequate emergency access.
- Result in inadequate parking capacity.
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., conflict with policies promoting bus turnouts, bicycle racks, etc), or cause a substantial increase in transit demand that cannot be accommodated by existing or proposed transit capacity or alternative travel modes.

Approach to Analysis

This impact assessment focuses primarily on the potential Project-specific, short-term, construction-related impacts on roadways that could result from construction-related changes in roadway capacities or increases from construction-related traffic. Once the Project is built and operating, the only new trips generated would be those required for periodic maintenance of the proposed distribution facilities (approximately one trip per year), which would be located within the Harding Park maintenance yard. Traffic volumes to/from the golf course would not be altered. Consequently, this analysis does not evaluate quantitative changes in intersection levels of service or conflicts with policies concerning alternative transit modes. Because the Project would not permanently alter area roadways (e.g., introduce sharp curves) this issue also is not considered further.

Construction activities that affect roadway operations are typically reduced, mitigated, or otherwise eliminated through the implementation of a traffic-control plan or through permits and construction requirements that ensure acceptable levels of traffic flow during traffic disruptions. When construction activity affects a public roadway right-of-way, local jurisdictions require the use of construction best management practices (BMPs) to ensure the safety of construction workers, motorists, bicyclists, and pedestrians throughout construction.

The impact assessment of construction-related impacts assumes that the contractor(s) would obtain any necessary road encroachment permits from Daly City and San Francisco prior to construction and would comply with the conditions of approval attached to Project implementation. In particular, the assessment assumes implementation of a traffic control plan (Mitigation Measure 3.5-1 to minimize traffic and on-street parking impacts on any streets affected by construction of a proposed Project. As appropriate, the SFPUC would consult with local traffic and transit agencies.

Construction Impacts

Impact 3.5-1: Substantial increase in traffic in relation to existing traffic load and capacity of street system. (Less than Significant with Mitigation)

Traffic-generating construction activities would include trucks hauling equipment and materials to and from the work site, and the daily arrival and departure of construction workers to and from the work site. There would be a crew of up to 10 workers at the pipeline construction site and up to 15 construction workers at the Harding Park maintenance yard on a daily basis.

Most of the material excavated for pipeline construction would remain onsite because it will also be used for backfill after pipeline installation. Disposal of excess earthen materials from pipeline excavation is estimated to involve less than 10 daily round-trip truck trips. An additional 10 daily round-trip truck trips would be necessary to deliver materials and equipment to the pipeline construction site. Including an estimated 10 daily construction worker vehicle trips, a total of 30 daily round-trip vehicle trips for pipeline construction would occur.

Of the approximately 8,500 cubic yards of material excavated at the maintenance yard, less than half that amount would remain onsite for backfill. Disposal of excess earthen materials from the Harding Park maintenance yard for storage tank and pump station construction is estimated to involve less than 10 daily round-trip truck trips. An additional 5 daily round-trip truck trips would be necessary to deliver materials and equipment to the site. Including an estimated 15 daily construction worker vehicle trips, a total of 30 daily round-trip vehicle trips for storage tank and pump station construction would occur During times of concurrent pipeline and storage tank and pump station construction, up to 60 daily round-trip vehicle trips would occur.

Increases in traffic associated with construction vehicle trips (truck trips and worker trips) would likely have an impact on levels of service since heavy traffic volumes already exist in the Project area; if pipeline construction near Higuera Avenue and excavation work for the storage tank and pump station were to occur at the same time, impacts associated with reduced levels of service would be exacerbated.

Construction-generated trucks on Project area roadways would interact with other vehicles. Creation of a construction work zone on high-volume roadways (e.g., Lake Merced Boulevard) would potentially create traffic safety hazards where traffic is routed into the travel lane adjacent to the work zone. Potential conflicts could also occur between construction traffic and bicyclists and pedestrians.

Implementation of **Measure 3.5-1**, requiring a Traffic Control Plan, which stipulates actions required of contractor(s) to reduce traffic flow impacts and reduce potential traffic safety hazards, would reduce this construction-phase impact to a less-than-significant level.

Mitigation Measures

Measure 3.5-1: ***Implement Traffic Control Plan.*** A Traffic Control Plan will be prepared in accordance with professional traffic engineering standards to show methods for

maintaining traffic flows on roadways directly affected by Project construction, and will include, at a minimum, the following:

- Circulation plans will be developed to minimize impacts on local street circulation. Flaggers and/or signage will be used to guide vehicles through and/or around the construction zone.
- Truck routes will be identified in the traffic control plan. Haul routes that minimize truck traffic on local roadways and residential streets will be utilized to the extent possible.
- Sufficient staging areas will be provided for trucks accessing construction zones to minimize disruption of access to adjacent land uses.
- Access to driveways and private roads will be maintained by using steel trench plates. If access must be restricted for brief periods, property owners will be notified in advance.
- Lane closures will be limited during peak hours to the extent possible. Outside of allowed working hours or when work is not in progress, roads will be restored to normal operations, with all trenches covered with steel plates.
- Pedestrian and bicycle access and circulation will be maintained during Project construction where safe to do so. If construction activities encroach on a bicycle lane, warning signs will be posted that indicate bicycles and vehicles are sharing the lane.
- Detours will be included for bicycles and pedestrians where feasible for portions of Lake Merced Perimeter Trail where potentially affected by Project construction.
- All equipment and materials will be stored in designated contractor staging areas on or adjacent to the worksite, in such a manner to minimize obstruction of traffic.
- Roadside safety protocols will be implemented. Advance "Road Work Ahead" warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) will be provided to achieve required speed reductions for safe traffic flow through the work zone.
- Construction will be coordinated with facility owners or administrators of sensitive land uses such as police and fire stations (including all fire protection agencies), transit stations, hospitals, and schools. Facility owners or operators will be notified in advance of the timing, location, and duration of construction activities and the locations of lane closures.
- Construction will be coordinated with local traffic agencies, SFMTA, and SamTrans, to minimize disruption and arrange for the temporary relocation of bus routes or bus stops in work zones as necessary.
- Roadway right-of-ways will be repaired or restored to their original conditions or better upon completion of construction.

Impact Significance after Mitigation: Less than Significant.

Impact 3.5-2: Elimination of travel lanes. (Less than Significant with Mitigation)

This impact evaluates the potential impact from temporary reduction in the number of, or available width of, travel lanes on Lake Merced Boulevard that would decrease roadway carrying capacity and increase congestion. Pipeline construction would result in traffic impacts, as construction activities would require the use of a portion of the roadway for excavation of the pipeline, and additional roadway area would be needed for construction staging, including materials storage. Impacts on any particular segment of Lake Merced Boulevard and affected intersections would be limited in duration, as construction of pipelines would progress at an average rate of about 100 feet to 300 feet per day. (See Chapter 2 for a description of the proposed construction methods.) The width of the construction work zone along the open trench would be wider than the trench width to facilitate access by trucks and loaders; for purposes of this analysis, the work zone is assumed to be up to about 25 feet wide. A work zone of 25 feet wide could be accommodated in the divided roadway where Lake Merced Boulevard is 35 feet in width between the raised median and the edge of pavement (a minimum of 10 feet width of pavement is needed for a travel lane). In all cases, Daly City/SFPUC will require the contractor to maintain one travel lane in each direction on Lake Merced Boulevard.

Traffic impacts would include temporary reduction in the number of travel lanes on Lake Merced Boulevard and would subject vehicles (including transit) to increased congestion and delays. Closures of travel lanes, including travel lanes on roads that are crossed, would vary based on the location within the pipeline alignment. As required by Measure 3.5-1, one-lane in each direction on Lake Merced Boulevard would be maintained at a minimum through the construction zone. On all other roads crossed by pipeline construction, alternate one-way traffic flow would be maintained through the intersection. No detours would be required.

The severity of the impact of lane closures on traffic resulting from pipeline construction would vary by time of day, the number of available travel lanes, and whether existing traffic volumes would be maintained during peak traffic flow periods. The temporary elimination of one or more travel lanes along the active construction zone on Lake Merced Boulevard during peak hours would result in traffic delays because traffic volume demand during construction could substantially exceed the capacity of the roadway, causing a significant traffic impact.

Construction of distribution facilities (i.e., storage tank and pump station) would occur at a discrete location (Harding Park maintenance yard) located outside of the right-of-way for Lake Merced Boulevard. At certain times during construction at the maintenance yard, flaggers would be required to allow truck access into and out of the maintenance driveway (to/from Lake Merced Boulevard). Any delays would be limited in duration.

Implementation of **Measure 3.5-1**, requiring a Traffic Control Plan, would reduce the potential impact on capacity of the street system during construction to a less-than-significant level because lane closures would be limited during peak hours, and because outside of allowed working hours or when work is not in progress, roads would be restored to normal operations, with all trenches covered with steel plates.

Construction activities could also disrupt the flow of public transit along the alignment and could slow bus movements. If lane closures are located adjacent to bus stops, bus stops may need to be temporarily relocated. Table 3.5-2 presents the roadways with bus lines that cross the alignment and that may be affected by construction. Implementation of **Measure 3.5-1**, requiring a Traffic Control Plan, would reduce the potential impact on transit operation because Daly City and SFPUC would require the construction contractor to work with their respective traffic and transit staff to minimize disruption and inform the public well in advance of transit stop changes.

Mitigation Measures

See Measure 3.5-1.

Impact Significance after Mitigation: Less than Significant

Impact 3.5-3: Displacement of on-street parking due to construction. (Less than Significant)

Construction-related equipment and trucks would be located in designated staging areas within the Project boundaries, and at proposed staging areas on Vidal Drive and SFPUC property near Vista Grande Canal near John Muir Drive. Pipeline construction on Lake Merced Boulevard would generally involve crews of 10 workers, who would park their vehicles in identified parking areas within the designated construction zone or staging areas, or on nearby local streets where on-street parking is available. Temporary parking impacts on nearby streets near any particular segment of roadway would not be long in duration, since pipeline construction would generally proceed at an average rate of 100 to 300 feet per day.

Construction of distribution facilities (storage tank and pump station) would occur at the Harding Park maintenance yard staff parking lot. The maintenance yard would remain operational and accessible to San Francisco Recreation and Park Department staff throughout the duration of construction; however, the parking area would not be accessible to staff. Recreation and Park Department staff parking would be relocated to the parking lot at the Harding Park Clubhouse; construction management and contractor staff would not have designated parking.

Mitigation: None required.

Impact 3.5-4: Impaired access to adjacent roadways and land uses. (Less than Significant with Mitigation)

This impact evaluates impaired access to adjacent roadways and land uses for both general and emergency response traffic as well as for bicycles and pedestrians. Heavy equipment operating adjacent to or within a road right-of-way could increase the risk of accidents. Construction-generated trucks on Project area roadways would interact with other vehicles. Creation of

construction work zones on high-volume and/or high-speed roadways (e.g., Lake Merced Boulevard) heighten concerns about increased traffic safety hazards because of the need to safely transition traffic into the travel lane(s) adjacent to the work zone. In addition, trenching and paving activities on Lake Merced Boulevard and across intersections with other roads would result in a temporary reduction in travel lanes; could impede or block vehicular, pedestrian, and bicycle circulation and access to adjacent land uses; and could increase hazards. Impact to vehicular access would occur mainly during construction hours, see Section 3.6, Noise, as vehicle access to adjacent land uses would be restored at the end of each workday through the use of steel trench plates or trench backfilling. Paths and trails within the construction corridor, listed below, would be disrupted for longer periods of time (one or more weeks) until pipeline construction progresses to another segment:

Path adjacent to the east side of Lake Merced Boulevard, Station 1+00 to 9+00 (refer to Figures 2-3a through 2-3b)

Lake Merced Perimeter Trail, Station 11+50 to Station 24+00 (refer to Figures 2-3c through 2-3f)

Lake Merced Perimeter Trail, Station 36+50 to Station 46+50 (refer to Figures 2-3h through 2-3j)

Where feasible, taking into consideration issues such as pedestrian safety near construction zones and sensitive habitat near Lake Merced, detours will be provided. No detours are feasible at locations in the southern portion of the pipeline alignment (southern pipeline terminus to the Lake Merced Parking Lot at Station 23+00), which would require temporary trail closures through this area.

Pipeline construction would also result in temporary closure of a portion of the bike lane in the southernmost portion of the pipeline alignment (south of John Muir Drive). Bicycle traffic through this area would be rerouted into the general travel lanes maintained for traffic through the construction zone. All pavement and lane markings would be restored following construction.

Construction of the distribution facilities (e.g., storage tank and pump station) would not require construction within roadways or other activities that could affect access to adjacent land uses or impede emergency access. Access impacts could occur at the location of the temporary construction staging area on Vidal Drive.

Implementation of **Measure 3.5-1** (Traffic Control Plan) would be adequate to ensure acceptable levels of traffic, pedestrian, and bicycle flow and to reduce any access impacts to a less-than-significant level.

Mitigation Measures

See Measure 3.5-1.

Impact Significance after Mitigation: Less than Significant.

Impact 3.5-5: Increased wear-and-tear on the designated haul routes. (Less than Significant with Mitigation)

The use of large trucks to transport equipment and material to and from the Project work site(s) for construction could affect road conditions on the designated haul routes by increasing the rate of road wear. Although haul routes have not been designated, logical routes would include I-280, Brotherhood Way, John Daly Boulevard and (for access to a staging area) John Muir Drive. State Route 35 may experience increased traffic if it is used by construction vehicles and it may experience an increase in use by the public if traffic is backed up on Lake Merced Boulevard during construction.

The degree to which this impact would occur depends on the design (pavement type and thickness) and existing condition of the road. Freeways and major arterials are designed to accommodate a mix of vehicle types, including heavy trucks; consequently, no significant wear and tear from trucks would be expected on I-280, Brotherhood Way or John Daly Boulevard. Local streets are generally not built with a pavement thickness that will withstand substantial truck traffic volumes. Implementation of Measure 3.5-5, which will establish requirements for restoring roads damaged by construction, would reduce potential impacts to a less than significant level.

Mitigation Measures

Measure 3.5-5: Daly City and San Francisco will enter into an agreement prior to construction that will detail pre-construction conditions and the post-construction requirements of a roadway rehabilitation program. Roads damaged by construction would be repaired to a structural condition equal to that which existed prior to construction activity.

Impact Significance after Mitigation: Less than Significant.

3.5.4 References – Transportation and Traffic

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3.6 Noise and Vibration

3.6.1 Introduction

This section provides an overview of the existing noise environment at the proposed Project sites and surrounding area, the regulatory framework, an analysis of potential noise and vibration impacts that would result from implementation of the proposed Project, and mitigation measures where appropriate.

3.6.2 Setting

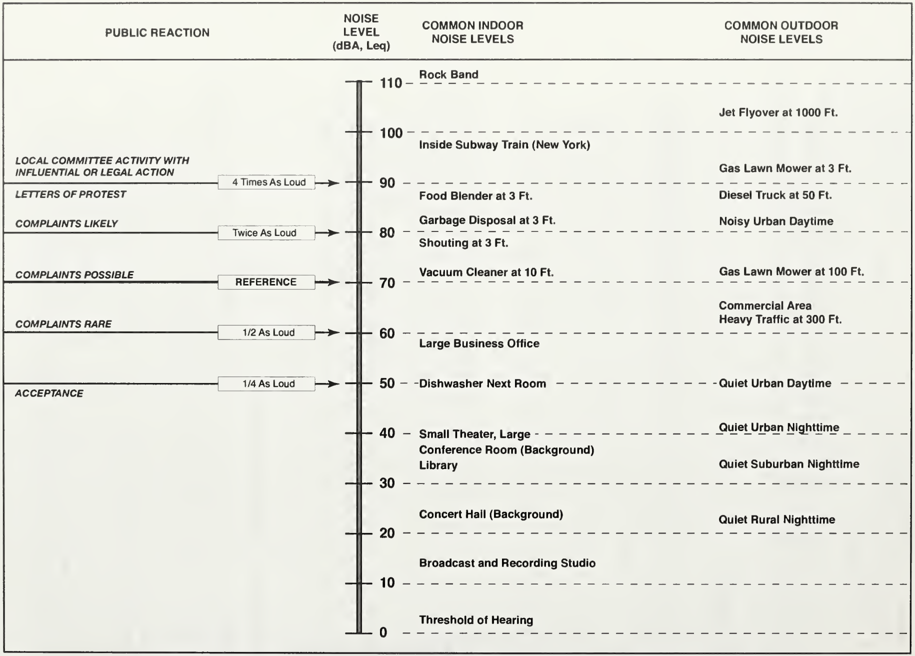
Noise can be generally defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ears decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels and effects are shown in **Figure 3.6-1**.

Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short-duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens) that are readily identifiable to the individual.



SOURCE: Caltrans Transportation Laboratory Noise Manual, 1982; and modification by ESA

Harding Park Recycled Water EIR . 207704

Figure 3.6-1
Effects of Noise on People

These successive additions of sound to the community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to accurately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

Leq: the energy-equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The Leq is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

Lmax: the instantaneous maximum noise level for a specified period of time.

L_{50}: the noise level that is equaled or exceeded 50 percent of the specified time period. The L_{50} represents the median sound level.

L_{90}: the noise level that is equaled or exceeded 90 percent of the specific time period. This is considered the background noise level during a given time period.

Ldn: 24-hour day and night A-weighted noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

CNEL: similar to Ldn, the Community Noise Equivalent Level (CNEL) adds a 5-dBA "penalty" for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dBA penalty between the hours of 10:00 p.m. and 7:00 a.m.

As a general rule, in areas where the noise environment is dominated by traffic, the Leq during the peak hour (i.e., the peak morning and evening commute hours) is generally within one to two decibels of the Ldn at that location.

Effects of Noise on People

When a new noise is introduced to an environment, human reaction can be predicted by comparing the new noise to the existing "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise levels, the following relationships occur:

- except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;
- outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- a change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and

- a 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion, hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion; rather they combine logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

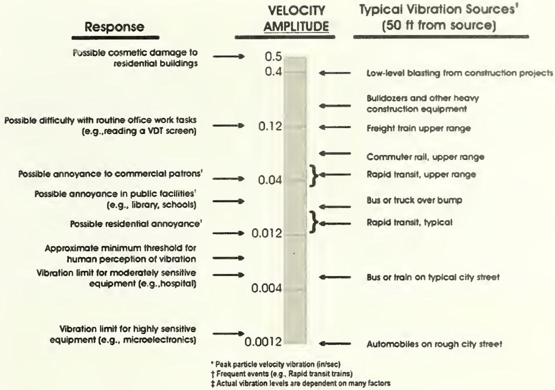
Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites. Line sources (such at traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans, 1998).

Vibration

Ground-borne vibration can be interpreted as energy transmitted in waves through the soil mass. These energy waves generally dissipate with distance from the vibration source (e.g., some construction activities, passing trucks, trains, etc.). Since energy is lost during the transfer of energy from one particle to another, vibration that is distant from a source is usually less perceptible than vibration closer to the source. However, actual human and structural response to different vibration amplitudes is influenced by a combination of factors, including soil type, distance between source and receptor, duration, and the number of perceived events. If great enough, the energy transmitted through the ground as vibration can result in structural damage.

Vibratory ground motion in the vicinity of an affected receptor or structure is measured in terms of peak particle velocity (PPV) in the vertical and horizontal directions in units of inches per second (in/sec). A freight train passing at 100 feet can cause vibrations of 0.1 in/sec PPV, while a strong earthquake can produce vibrations in the range of 10 in/sec PPV. **Figure 3.6-2** illustrates typical amplitudes of vibration in terms of peak particle velocity and typical human response.



SOURCE: Wilson Ihrig Associates, 2009.

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Figure 3.6-2
Range of Vibration Amplitudes and Typical Sources and Responses

Existing Noise and Vibration Environment and Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others, due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, and parks and other outdoor recreation areas generally are more sensitive to noise than are commercial (other than lodging facilities) and industrial land uses. The nearest residential sensitive receptor to the proposed underground storage tank and pump station is approximately 240 feet. A fairway of Harding Park is adjacent to the west side of the maintenance yard. The nearest sensitive receptor to pipeline construction is approximately 30 feet away.

The noise environment along the pipeline corridor and at the underground storage tank/pump station site is influenced primarily by truck and automobile traffic on Lake Merced Boulevard and operation noise from the Harding Park maintenance yard. To quantify the existing noise environment, five short-term (ST) 5-minute noise level measurements were taken on and around the site. All noise measurements were collected using calibrated Metrosonics dB3080 sound level meters. **Figure 3.6-3** shows the locations of the short-term noise measurements; **Table 3.6-1** presents the results of the noise measurements.

TABLE 3.6-1
EXISTING NOISE ENVIRONMENTS AT PROPOSED PROJECT LOCATIONS

Location	Time Period	Leq (decibels)	Noise Sources
ST-1: Middle of Harding Park maintenance yard parking lot 115 feet from the center of Lake Merced Boulevard	Tuesday 03/31/09 3:41 – 3:46 PM	5-minute Average Noise Level, Leq 60	Traffic on Lake Merced Boulevard, 60 – 61dBA Bulldozer at Reuser Inc., 58 dBA Truck on Santana Dr., 65 dBA
ST-2: Outside of Harding Park maintenance yard fence on Golf Course 55 feet from the center of Lake Merced Boulevard	Tuesday 03/31/09 3:47 – 3:52 PM	5-minute Average Noise Level, Leq 69	Traffic on Lake Merced Boulevard, 68 – 75 dBA No traffic, 50 dBA
ST-3: Mouth of driveway of Harding Park maintenance yard 112 feet from center of Lake Merced Boulevard	Tuesday 03/31/09 3:57 – 4:02 PM	5-minute Average Noise Level, Leq 61	Traffic on Lake Merced Boulevard, 52 - 65 dBA Quiet, 45 dBA
ST-4: In front of nearest sensitive receptor to Harding Park maintenance yard 145 feet from the center of Lake Merced Boulevard	Tuesday 03/31/09 4:10 – 4:15 PM	5-minute Average Noise Level, Leq 62	Traffic on Lake Merced Boulevard, 59 – 64 dBA Wind, 54 dBA
ST-5: Near intersection of Lake Merced Boulevard and John Muir Drive, 45 feet from the center of Lake Merced Boulevard	Tuesday 03/31/09 4:24 – 4:29 PM	5-minute Average Noise Level, Leq 69	Traffic on Lake Merced Boulevard, 68 dBA Traffic on John Muir Drive, 73 dBA

SOURCE: ESA, 2009.

Sources of ambient ground-borne vibration in the proposed Project area include automobiles and trucks along Lake Merced Boulevard and streets intersecting with Lake Merced Boulevard. Lake Merced Boulevard has traffic volumes of 32,000 vehicles per day (see Table 3.5-2 in Section 3.5, Transportation and Traffic). Vibration from traffic may be perceptible to nearby residents. As Figure 3.6-2 indicates, vehicles traveling on Lake Merced Boulevard likely generate vibration amplitudes ranging from 0.0012 to 0.04 PPV at 50 feet from the vibration source. There is some background seismic motion that generates ground-borne vibration, and occasionally earthquakes in the Bay Area produce distinctly perceptible ground motion. In extreme cases, earthquake motions can induce cosmetic, minor, or major structural damage in buildings. Strong motion earthquakes are expected to occur and could cause significant damage to poorly engineered buildings in the Project area, though the frequency of occurrence has been very low. The proposed Project area's geology consists of the Colma Formation, which is primarily sand along with some loose gravels, silt and clay. This makes it susceptible to very strong and violent shaking should an earthquake occur on any of the several faults in the vicinity of the proposed Project. Section 3.11, Geology and Soils, provides a discussion of project area geological and soil conditions.

SOURCE: ESA and Carollo

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Figure 3.6-3
Noise Measurement Locations

3.6.2 Regulatory Framework

Federal

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 Code of Federal Regulations (CFR), Part 205, Subpart B. The federal truck pass-by noise standard is 80 dBA at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers.

State

The State of California establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the State pass-by standard is consistent with the federal limit of 80 dB. The State pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80 dBA at 15 meters from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanction of vehicle operators by state and local law enforcement officials.

The State has also established noise insulation standards for new multi-family residential units, hotels, and motels that would be subject to relatively high levels of transportation-related noise. These requirements are collectively known as the California Noise Insulation Standards (Title 24, California Code of Regulations). The noise insulation standards set forth an interior standard of DNL 45 dBA in any habitable room. They require an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than DNL 60 dBA. Title 24 standards are typically enforced by local jurisdictions through the building permit application process.

Local

Daly City Municipal Code

Section 9.22 of the Daly City Municipal Code states that between the hours of 10 p.m. and 6 a.m. no person shall cause, create or permit any noise or other disturbance upon his property which may be heard by or which noise disturbs or harasses, any other person beyond the confines of the property from which the noise, music, sound or disturbance emanates (City of Daly City, 2008).

Daly City General Plan

The Daly City General Plan Noise Element (2004) includes Noise Compatibility Guidelines that define normally acceptable noise levels to be 60 dBA CNEL for residential land uses. Construction activities in Daly City are limited to the daytime hours of 8 a.m. to 5 p.m., and are prohibited on weekends and holidays.

San Francisco Municipal Code

Section 2907(a) specifies a construction noise limit of 80 dBA at 100 feet (or an equivalent sound level at some other convenient location) for any powered construction equipment. Impact tools, pavement breakers, and jackhammers are exempted from this noise limit provided they are equipped with appropriate noise-attenuating mufflers, shields, and/or shrouds according to

Section 2908(b) of the Municipal Code (City and County of San Francisco, 2008). Section 2908 of the City and County of San Francisco Municipal Code specifies noise limits during construction at night. Construction noise is not allowed to exceed ambient noise levels by 5 dBA from 8:00 p.m. to 7:00 a.m. of the following day (seven days a week), unless a special permit has been granted by the Director of Public Works.

3.6.3 Impacts and Mitigation Measures

Significance Criteria

Based on the *CEQA Guidelines,* a project may be deemed to have a significant effect on the environment with respect to noise and/or ground-borne vibration if it would result in:

- Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- Exposure of people residing or working in the project area to excessive noise levels (for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport);
- Exposure of people residing or working in the project area to excessive noise levels (for a project within the vicinity of a private airstrip); or
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.

Approach to Analysis

Noise

Noise impacts are assessed based on a comparative analysis of the noise levels resulting from the proposed Project and the noise levels under existing conditions. Analysis of temporary construction noise effects is based on typical construction phases and equipment noise levels and attenuation of those noise levels due to distances, and any barriers between the construction activity and the sensitive receptors near the sources of construction noise. Noise impacts from short-term construction activities could exceed noise thresholds and could result in a significant construction impact if short-term construction activity occurred outside of the hours identified in Daly City's general plan (8:00 a.m. to 5:00 p.m. weekdays), or exceeded the thresholds set forth in the San Francisco Municipal Code for non-impact, powered construction equipment (80 dBA at 100 feet). No construction is proposed to occur between 8:00 p.m. and 7:00 a.m. Further, as established by the WSIP PEIR, a significant impact could result if noise levels at a sensitive

receptor from "stationary" (non-transportation) noise sources were to exceed the speech interference criterion (defined below) of 70 dBA every work day for longer than two weeks.

- Speech Interference. Speech interference is an indicator of impact on typical daytime and evening activities. A speech interference threshold, in the context of impact duration and time of day, is used to identify substantial increases in noise from temporary construction activities. Noise peaks generated by construction equipment could result in speech interference in adjacent buildings if the noise level in the interior of the building exceeds 45 to 60 dBA. A typical building can reduce noise levels by 25 dBA with the windows closed (U.S. EPA, 1974). This noise reduction could be maintained only on a temporary basis in some cases, since it assumes windows must remain closed at all times. Assuming a 25 dBA reduction with the windows closed, an exterior noise level of 70 dBA Leq at receptors would maintain an acceptable interior noise environment of 45 dBA. (Such noise levels would be sporadic rather than continuous in nature, because different types of construction equipment would be used throughout the construction process.)

Operational impacts were analyzed using reference noise levels and attenuation for operational equipment. A resulting off-site noise level at residences from stationary non-transportation sources that exceed an exterior maximum of 60 dBA CNEL at a residential area would result in a significant noise impact.

Vibration

The significance criteria identify "excessive ground-borne vibration" as a significant impact. For this analysis, the following issues were considered in determining what would constitute excessive ground-borne vibration:

- Potential for building damage, including cosmetic damage
- Interruption of normal living activity due to vibration

Construction Impacts

Impact 3.6-1: Substantial temporary increase in noise level during construction. (Less than Significant with Mitigation)

The proposed Project construction would generate noise at varying levels depending on the construction phase and type of equipment used. **Table 3.6-2** shows typical noise levels during different phases of construction. **Table 3.6-3** shows noise levels produced by various types of construction equipment. Noise effects are considered significant if (a) construction occurs outside of the hours specified in the Daly City General Plan, (b) noise levels exceed 70 dBA (speech interference criterion) at the nearest sensitive receptor (building exterior) for construction activities in one place for more than two weeks; or (c) noise levels from specific non-impact construction equipment operating in San Francisco exceeds 80 dBA at 100 feet. For pipeline construction in Daly City between 8:00 a.m. and 5:00 p.m., no mitigation is required. Construction activities in San Francisco between 7:00 a.m. and 8:00 p.m. would require mitigation for activities exceeding 70 dBA. Noise levels near the pump station and storage tank construction could exceed 70 dBA at the nearest receptor.

**TABLE 3.6-2
TYPICAL CONSTRUCTION NOISE LEVELS**

Construction Phase	Noise Level (dBA, Leq)[a]
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

[a] Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: U.S. Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, 1971.

**TABLE 3.6-3
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT**

Construction Equipment	Noise Level (dBA, Leq at 50 feet)
Dump Truck	88
Portable Air Compressor	81
Concrete Mixer (Truck)	85
Scraper	88
Jack Hammer	88
Dozer	87
Paver	89
Generator	76
Pile Driver	101
Backhoe	85

SOURCE: Cunniff, Environmental Noise Pollution, 1977.

The proposed Project construction would be temporary and occur in short intervals (i.e. as long as the particular piece of construction machinery is running). Construction activity noise levels at and near the construction areas would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction-related material haul trips would raise ambient noise levels along haul routes, depending on the number of haul trips made and types of vehicles used.

The nearest sensitive receptors to pipeline construction in Daly City are approximately 30 feet away; these residences would experience noise levels of about 93 dBA Leq during excavation and finishing. However, given the approximately 6-foot high wall lining the edge of the properties, noise levels could be reduced to about 88 dBA Leq. Pipeline construction would not affect any given sensitive receptor for more than two weeks because of the pace of construction (100-300 feet per day). Exposure to construction noise at individual residences would be lessened over time due to attenuation of noise by construction moving further down the pipeline.

Pipeline construction in San Francisco would be as near as approximately 160 feet to sensitive receptors; these residences would experience noise levels of about 79 dBA Leq. Construction noise from specific equipment at these levels would be below the noise threshold of 80 dBA. Pipeline construction is not expected to reach these noise levels at the exteriors of any given residence for longer than two weeks because of the pace of construction.

Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling of distance. Based on the proposed Project area, an attenuation of 6 dBA is assumed. The nearest sensitive receptors to the storage tank/pump station site are residences approximately 240 feet east of the proposed pump station inside of the maintenance yard fence. Additionally, a Harding Park golf course fairway is adjacent to the maintenance yard. Table 3.6-2 indicates that excavation is expected to generate noise levels of 89 dBA at 50 feet; if attenuated out to 240 feet, the nearest residence would experience noise levels of about 75 dBA Leq during finishing and excavation. Noise barriers (required by Measure 3.6-1, below) can reduce noise levels by 6 to 10 decibels if located near the noise source. Barrier effectiveness can be increased by as much as 5 decibels by applying sound-absorbing material to the inner surface of the barrier (Federal Transit Administration, 1995).

Compliance with the San Francisco Municipal Code and the Daly City General Plan (with implementation of Measure 3.6-1) would reduce construction noise to a less-than-significant impact.

Mitigation Measures

Measure 3.6-1: The contractor will incorporate the following requirements into the contract specifications:

- **Construction Hours**

  Pipeline Construction

  In Daly City: Construction activities will be limited to between the weekday hours of 8:00 a.m. and 5:00 p.m. Pipeline construction will not take place on the weekend or after 5:00 p.m.

  In San Francisco: Construction will be limited to between the hours of 7:00 a.m. and 5:00 p.m. Pipeline construction will not take place on the weekend or during evenings.

  Pump Station/Storage Tank Construction

  In San Francisco: Construction will be limited to between the hours of 7:00 a.m. and 5:00 p.m., and may occasionally occur on weekends or evenings (up to 8:00 p.m.).

- Equipment and trucks used for construction will use the industry standard noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds, wherever feasible).

- At the pump station/storage tank site, the contractor will install temporary sound barriers between the construction site and the closest receptors to reduce noise levels

to below the speech interference criterion at the closest receptor (the golf course fairway and the residences east of the site). The elevation of the barrier should be sufficient to interrupt the line-of-sight between the receptors and the tops of stacks (exhaust pipes) of construction equipment by about 5 to 10 feet. Sound-absorbing blankets can also be used at appropriate locations as necessary to protect nearby receptors. Any openings in sound barriers that are provided for truck/vehicle access will be located away from sensitive receptors (i.e., to the south). The contractor will retain an acoustical engineer to provide design specifications for the sound barrier along the golf course.

- Stationary noise sources will be located as far from adjacent receptors, whenever feasible, and they will be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible.

Impact Significance after Mitigation: Less than Significant.

Impact 3.6-2: Construction related vibration effects. (Less than Significant with Mitigation)

Construction of the pipeline could cause vibration that could disturb local residents and potentially cause damage to buildings and structures if vibration levels were allowed to exceed performance standards. As shown in Figure 3.6-2, the vibration limit for possible cosmetic damage for residential buildings is 0.5 inch/second PPV. Measurements collected during various construction activities (including pavement breaking, vibratory sheetpile driving, sheetpile driving by an excavator shovel, vibratory soil compaction, and earth excavation) at an unrelated project (construction of the Richmond Transport Tunnel north of the proposed pump station/storage tanks site) were found to produce vibration levels ranging between 0.03 to 0.38 in/sec PPV at 30 to 35 feet (ESA, 1997).

Pipeline installation would be done using the open-cut trench method and vibration effects would move with construction equipment, progressing along the length of the alignment. During pipeline installation, truck movements and pipeline placement would probably constitute the main vibration sources. After the pipeline has been installed, the trench would be backfilled, compacted, and repaved. The initial excavation of the trench would require equipment such as trenchers and large trucks. Vibratory sheetpiling would not be used to shore the majority of the trench walls. However, in some portions of the pipeline where the pipeline must cross under existing piping, trench boxes may not be adequate and sheet piles may be required. Drilled piles or the use of a sonic or vibratory pile driver causes lower vibration levels where the geological conditions permit their use.

The proposed Project construction is proposed to occur primarily during the daytime weekday hours (see Mitigation Measure 3.6-1). Construction during weekend and evening hours is not expected (with the exception of the pump station and storage tank in San Francisco). The closest residences to the pipeline construction are approximately 30 feet from Lake Merced Boulevard in Daly City (south of the intersection of John Muir Drive and Lake Merced Boulevard) (see Figure 2-3a and

2-3b). Based on the proximity of these residences to the pipeline construction, it is possible that vibratory compacting could generate vibration levels over the established thresholds, and disrupt activities at adjacent land uses. Implementation of vibration limits (Measure 3.6-2) would reduce this potential impact to less than significant. (As described in Section 3.4, Cultural Resources, there are no recorded historic architectural/structural resources within 50 feet of project sites.)

Mitigation Measures

Measure 3.6-2a: The contractor will prepare and submit a vibration control plan documenting that proposed construction equipment and methods would comply with the vibration specification of 0.5 in/sec PPV at any structure within 50 feet of the vibration source. Construction equipment and methods would also comply with more stringent standards specified by SFPUC or Daly City for existing utilities located close to locations where pile driving may occur, based on site-specific conditions such as age and composition of existing pipelines and tunnels. If these standards cannot be met, excavation and shoring must occur by other means and pile driving will not be used.

Measure 3.6-2b: Pile holes will be pre-drilled wherever feasible to reduce potential noise and vibration impacts. Where feasible, sonic or vibratory pile drivers will be used instead of impact pile drivers (sonic pile drivers are only effective in some soils).

Measure 3.6-2c: The contractor will limit pile-driving activities to the following areas: Station 28+20; Station 30+25; Station 45+40; and Station 46+20. (All stations are +/- 20 feet.)

Measure 3.6-2d: Pile driving activities shall be prohibited during the evening and nighttime hours (5 p.m. to 8 a.m.).

Significance after Mitigation: Less than Significant.

Operational Impacts

Impact 3.6-3: Substantial permanent increase in noise level due to Project operation. (Less than Significant)

Operational noise associated with the proposed Project would consist of traffic and pump station noise. The increase in traffic generated by proposed Project operation would be for routine inspection and maintenance of the proposed Project components and would be minimal (one or two days per year). Regarding the pump station, pumps would be housed and located approximately 240 feet from the nearest residence across Lake Merced Boulevard. Noise would emanate from enclosure vents, so vent locations would be a factor in their effect on nearby sensitive receptors. The vents (or louvers) on the pump station will be located on the west side of the building facing Harding Park and away from the nearest residences. In addition, the pump station will install acoustic panels along the interior walls to reduce sound. With the incorporation

of these noise reducing design features, the pumps are expected to produce noise levels that would not cause a significant impact.

A study of a comparable pump station (with seven pumps) found that the pumps produced noise levels of approximately 53 dBA at 50 feet. If this reference pump noise is attenuated out to the nearest sensitive receptor at 240 feet, these residences would experience noise levels of about 38 dBA Leq. The proposed Project's pump station would only require two pumps and would generate less noise than the reference pump station. Therefore, noise from the additional proposed Project-related traffic and pump station operations would be a less than significant impact.

Mitigation: None required.

3.6.4 References – Noise and Vibration

Caltrans, *Technical Noise Supplement*, 1998.

City of Daly City, Daly City Municipal Code, April 2008.

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Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, April 1995

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Wilson, Ihrig, & Associates, Inc. 2009. *Crystal Springs Pipeline No. 2, Noise and Vibration Study, Impacts and Mitigation, Technical Memo,* Final, April 2009.

3.7 Air Quality

This section addresses the air quality impacts that would result from implementation of the proposed Project. This analysis estimates potential increases in criteria air pollutants and greenhouse gases that would be associated with proposed Project implementation. Due to the nature of this proposed Project, principal air emissions associated with proposed Project implementation would be short-term, occurring during construction. Construction-related air emissions are evaluated in accordance with the BAAQMD CEQA guidelines for assessing and mitigating air quality impacts. Operational emissions are analyzed by estimating greenhouse gasses through indirect electricity usage provided by the applicant and formulas and emission factors from the *California Climate Action Registry Report Protocol* (California Climate Action Registry, 2008).

3.7.1 Setting

General Climate and Meteorology

The proposed Project site is located within the Bay Area Air Basin, which encompasses the nine-county region including all of Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, Marin and Napa Counties, and the southern portions of Solano and Sonoma Counties. The climate of the Bay Area is determined largely by a high-pressure system that is almost always present over the eastern Pacific Ocean off the west coast of North America. High-pressure systems are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface, and resulting in the formation of subsidence inversions. In winter, the Pacific high-pressure system shifts southward, allowing storms to pass through the region. During summer and fall, emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants, such as ozone.

Ambient Air Quality

The Bay Area Air Quality Management District (BAAQMD) operates a regional monitoring network that measures the ambient concentrations of six criteria pollutants (described below). Ozone and particulate matter are monitored throughout the Bay Area. The monitoring station closest to the proposed Project is the San Francisco Arkansas Street Monitoring Station. Data from this monitoring station were used to characterize existing conditions within the proposed Project vicinity. **Table 3.7-1** shows a three-year summary from this station. The table also compares measured pollutant concentrations with state and national ambient air quality standards.

Criteria Air Pollutants

Ozone. Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Ozone is not emitted directly into the atmosphere, but is a

TABLE 3.7-1
AIR QUALITY DATA SUMMARY (2006-2008):
ARKANSAS STREET MONITORING STATION

Pollutant	State Standard[a]	National Standard[a]	Monitoring Data by Year 2006	2007	2008
Ozone					
Highest 1-hour average, ppm [b]	0.09	NA	0.053	0.060	0.082
Days over State Standard			0	0	0
Highest 8-hour average, ppm [b]	0.07	0.075	0.046	0.053	0.066
Days over National Standard			0	0	0
Days over State Standard			0	0	0
PM_{10}					
Highest State average, µg/m3 [b]	50	150	**61**	**70**	**41**
Estimated days over State Standard [c]			3	2	NA
Highest National average, µg/m3 [b]			58	67	41
Estimated days over National Standard [c]			0	0	0
State annual average, µg/m3 [b]	20	NA	**23**	**22**	**NA**
$PM_{2.5}$					
Highest 24-hour average, µg/m3 [b]	NA	35	**54**	**45**	29
Estimated days over National Standard			3	5	NA
State annual average, µg/m3 [b]	12	15	9.7	8.9	NA
NO_2					
Highest 1 hour State average, ppm	0.18	NA	0.107	0.069	0.062
Days over State Standard			0	0	0
CO					
Highest 8 hour State average, ppm	9	9	2.09	1.60	2.29
Days over State Standard			0	0	0
Highest 8 hour National average, ppm			2.09	1.60	2.29
Days over National Standard			0	0	0

NOTES: Values in **bold** are in excess of at least one applicable standard. NA = Not Available.

[a] Generally, state standards and national standards are not to be exceeded more than once per year.
[b] ppm = parts per million; µg/m3 = micrograms per cubic meter.
[c] PM_{10} is not measured every day of the year. Number of estimated days over the standard is based on 365 days per year.

SOURCE: California Air Resources Board (ARB), 2009. Summaries of Air Quality Data, 2006, 2007, 2008; http://www arb ca.gov/adam/cgi-bin/db2www/polltrendsb.d2w/start

secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NOx). ROG and NOx are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed

downwind of sources of ROG and NOx under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone.

Carbon Monoxide. Ambient carbon monoxide concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence carbon monoxide concentrations. Under inversion conditions, carbon monoxide concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. When inhaled at high concentrations, carbon monoxide combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses.

Carbon monoxide concentrations have declined dramatically in California due to existing controls and programs and most areas of the state including the proposed Project region have no problem meeting the carbon monoxide state and federal standards. CO measurements and modeling were important in the early 1980s when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, fewer emissions from new vehicles and improvements in fuels.

Respirable Particulate Matter (PM_{10} and $PM_{2.5}$). PM_{10} and $PM_{2.5}$ consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. (A micron is one-millionth of a meter). PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others such as vehicular traffic have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility. Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a health hazard. The remaining fraction, PM_{10} and $PM_{2.5}$, are a health concern particularly at levels above the federal and state ambient air quality standards. $PM_{2.5}$ (including diesel exhaust particles) is thought to have greater effects on health, because these particles are so small and thus are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Recent studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Children are more susceptible to the health risks of PM_{10} and $PM_{2.5}$ because their immune and respiratory systems are still developing.

Mortality studies since the 1990s have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge and continued reasons for some skepticism, a comprehensive evaluation of the research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health (Dockery and Pope 2006). The California Air Resources Board (CARB) has estimated that achieving the ambient air quality standards for PM_{10} could reduce premature mortality rates by 6,500 cases per year (CARB, 2005).

Nitrogen Dioxide (NO_2). NO_2 is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2. NO_2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Nitrogen dioxide is an air quality concern because it acts a respiratory irritant and is a precursor of ozone. Nitrogen dioxide is a major component of the group of gaseous nitrogen compounds commonly referred to as nitrogen oxides (NOx). Nitrogen oxides are produced by fuel combustion in motor vehicles, industrial stationary sources (such as industrial activities), ships, aircraft, and rail transit. Typically, nitrogen oxides emitted from fuel combustion are in the form of nitric oxide (NO) and nitrogen dioxide (NO_2). NO is often converted to NO_2 when it reacts with ozone or undergoes photochemical reactions in the atmosphere. Therefore, emissions of NO_2 from combustion sources are typically evaluated based on the amount of NOx emitted from the source.

Sulfur Dioxide (SO_2). SO_2 is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. SO_2 is also a precursor to the formation of atmospheric sulfate, and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain.

Lead. Ambient lead concentrations meet both the federal and state standards in the proposed Project area. Lead has a range of adverse neurotoxin health effects, and was formerly released into the atmosphere primarily via leaded gasoline products. The phase-out of leaded gasoline in California resulted in decreasing levels of atmospheric lead.

Sensitive Receptors

Land uses such as schools, daycare centers, hospitals, and convalescent homes are considered to be more sensitive than the general public to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality. Residential areas are considered more sensitive to air quality conditions than commercial and industrial areas, because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational uses or parks are also considered sensitive due to the greater exposure to ambient air quality conditions, and because the presence of pollution detracts from the recreational experience.

The potentially sensitive receptors located in proximity to proposed Project construction sites include:

- Residences east of Lake Merced Boulevard, 240 feet from construction and operational activities of the pump station.
- Residences east of Lake Merced Boulevard, approximately 30 feet from the pipeline construction activities.
- Recreational paths along Lake Merced Boulevard adjacent to pipeline construction activities.

The Doelger Senior Center at Westlake Park is about a tenth of a mile south of the southern terminus of the pipeline alignment.

Toxic Air Contaminants (TACs)

Non-criteria air pollutants or TACs are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes approximately 200 compounds, including particulate emissions from diesel-fueled engines.

In 2001, the CARB assessed the statewide health risks from exposure to diesel exhaust and to other toxic air contaminants. It is difficult to distinguish the health risks of diesel emissions from the other air toxics, since diesel exhaust contains about 40 different TACs. The CARB study (CARB, 2000) detected diesel exhaust by using ambient air carbon soot measurements as a surrogate for diesel emissions. The Study reported that in 2000, the statewide cancer risk from exposure to diesel exhaust was about 540 per million (i.e., 540 cancers per million people) as compared to a total risk for exposure to all ambient air toxics of 760 per million. This estimate of risk from diesel exhaust, which accounts for about 70 percent of the total risk from TACs, included both urban and rural areas in the state. It can be considered as an average worst-case for the state, since it assumes constant exposure to outdoor concentrations of diesel exhaust and does not account for expected lower concentrations indoors, where people spend most of their time.

Odorous Emissions

Though offensive odors from stationary sources rarely cause any physical harm, they still remain unpleasant and can lead to public distress generating citizen complaints to local governments. The occurrence and severity of odor impacts depend on the nature, frequency and intensity of the source; wind speed and direction; and the sensitivity of receptors. The *CEQA Guidelines* recommends that odor impacts be considered for any proposed new odor sources located near existing receptors, as well as any new sensitive receptors located near existing odor sources. Generally, increasing the distance between the receptor and the source will mitigate odor impacts.

Greenhouse Gases

Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse. The principal GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and water vapor (H_2O).[1]

The accumulation of GHGs has been implicated as a driving force for global climate change. Climate change is commonly used interchangeably with "global warming" and the "greenhouse effect." Definitions of climate change vary between and across regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and anthropogenic activities that alter the composition of the global atmosphere.

Both natural processes and human activities emit greenhouse gases. The accumulation of greenhouse gases in the atmosphere regulates the earth's temperature; however, emissions from human activities such as electricity production and motor vehicles have elevated the concentration of greenhouse gases in the atmosphere. This accumulation of greenhouse gases has contributed to an increase in the temperature of the earth's atmosphere and contributed to global climate change. Carbon dioxide is the reference gas for climate change because it is considered the most important greenhouse gas. To account for the warming potential of greenhouse gases, greenhouse gas emissions are often quantified and reported as CO_2 equivalents (CO_2e). Large emission sources are reported in million metric tons of CO_2e. HFCs are used in refrigeration systems as substitutes for CFCs, which were banned for destroying the ozone layer.

Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CARB, 2006). Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

3.7.2 Regulatory Framework

Federal

The federal Clean Air Act (FCAA) requires the U.S. Environmental Protection Agency (USEPA) to identify National Ambient Air Quality Standards (NAAQS or national standards) to protect public health and welfare. National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, PM_{10}, $PM_{2.5}$, and lead. **Table 3.7-2** shows current national and state ambient air quality standards and provides a brief discussion of the related health effects and principal sources for each pollutant.

1 Ozone that is not directly emitted but formed from other gases in the troposphere—the lowest level of the earth's atmosphere—also contributes to the retention of heat.

TABLE 3.7-2
STATE AND NATIONAL CRITERIA AIR POLLUTANT STANDARDS, EFFECTS, AND SOURCES

Pollutant	Averaging Time	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone	1 hour	0.09 ppm	---	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when reactive organic gases (ROG) and nitrogen oxides (NOx) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
	8 hours	0.07 ppm[1]	0.075 ppm		
Carbon Monoxide	1 hour	20 ppm	35 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm		
Nitrogen Dioxide	1 hour	0.18 ppm	---	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
	Annual Avg.	0.030	0.053 ppm		
Sulfur Dioxide	1 hour	0.25 ppm	---	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	3 hours	---	0.5 ppm		
	24 hours	0.04 ppm	0.14 ppm		
	Annual Avg.	---	0.03 ppm		
Respirable Particulate Matter (PM_{10})	24 hours	50 µg/m^3	150 µg/m^3	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	Annual Avg.	20 µg/m^3	---		
Fine Particulate Matter ($PM_{2.5}$)	24 hours	---	35 µg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.
	Annual Avg.	12 □g/m^3	15 µg/m^3		
Lead	Monthly Ave.	1.5 □g/m^3	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction.	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	---	1.5 µg/m^3		
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Geothermal Power Plants, Petroleum Production and refining	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations)
Sulfates	24 hour	25 □g/m^3	No National Standard	Produced by the reaction in the air of SO2.	Breathing difficulties, aggravates asthma, reduced visibility
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	No National Standard	Reduces visibility, reduced airport safety, lower real estate value, discourages tourism.	See $PM_{2.5}$.

NOTE: ppm = parts per million; µg/m^3 = micrograms per cubic meter.

1 This concentration was approved by the Air Resources Board on April 28, 2005 and became effective May 17, 2006.

SOURCE: California Air Resources Board, 2008a. *Ambient Air Quality Standards,* available at http://www.arb.ca.gov/research/aaqs/aaqs2.pdf Standards last updated November 17, 2008. California Air Resources Board, 2001. *ARB Fact Sheet: Air Pollution Sources, Effects and Control,* http://www.arb.ca.gov/research/health/fs/fs2/fs2.htm, page last updated December 2005.

Pursuant to the 1990 Federal Clean Air Act Amendments (CAAA), the USEPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the NAAQS had been achieved. **Table 3.7-3** shows the current attainment status for the Bay Area Air Basin.

TABLE 3.7-3
BAY AREA AIR BASIN ATTAINMENT STATUS

	Designation/Classification	
Pollutant	**Federal Standards**	**State Standards**
Ozone – one hour	No Federal Standard[1]	Nonattainment
Ozone – eight hour	Nonattainment	Nonattainment
PM_{10}	Unclassified	Nonattainment
$PM_{2.5}$	Unclassified/Attainment	Nonattainment
CO	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	No Designation	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified

1 Federal One Hour Ozone National Ambient Air Quality Standard was revoked on June 15, 2005
2 The State 8-hour ozone standard was approved by the ARB on April 28, 2005, and became effective May 17, 2006.

SOURCE: BAAQMD, 2008. *Ambient Air Quality Standards and Bay Area Attainment Status*, http://www.baaqmd.gov/pln/air_quality/ambient_air_quality.htm, page updated Dec 30, 2008 and accessed April 20, 2009.

The CAAA requires each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The CAAA added requirements for states containing areas that violate the NAAQS to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The USEPA has responsibility to review all state SIPs to determine if they conform to the mandates of the CAAA and will achieve air quality goals when implemented. If the USEPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan (FIP) for the nonattainment area and may impose additional control measures. Failure to submit an approvable SIP or to implement the plan within mandated timeframes can result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

Regulation of TACs, termed Hazardous Air Pollutants (HAPs) under federal regulations, is achieved through federal, State and local controls on individual sources. The 1977 Clean Air Act Amendments required the USEPA to identify National Emission Standards for Hazardous Air Pollutants (NESHAPs) to protect public health and welfare. These substances include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible

hazard, based on scientific studies of exposure to humans and other mammals. There is uncertainty in the precise degree of hazard.

State

The CARB manages air quality, regulates mobile emissions sources, and oversees the activities of county Air Pollution Control Districts and regional Air Quality Management Districts. CARB establishes state ambient air quality standards and vehicle emissions standards.

California has adopted ambient standards that are more stringent than the federal standards for the criteria air pollutants. These are shown in Table 3.7-2. Under the California Clean Air Act (CCAA) patterned after the CAAA, areas have been designated as attainment or nonattainment with respect to the state standards. Table 3.7-3 summarizes the attainment status with California standards in the Bay Area Air Basin.

Toxic Air Contaminants

California law defines TACs as air pollutants having carcinogenic effects. The State Air Toxics Program was established in 1983 under Assembly Bill (AB) 1807 (Tanner). A total of 243 substances have been designated TACs under California law; they include the 189 (federal) HAPs adopted in accordance with AB 2728. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions. Toxic air contaminant emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment and, if specific thresholds are violated, are required to communicate the results to the public in the form of notices and public meetings.

Climate Change and Greenhouse Gases

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of greenhouse gas (GHG) would be progressively reduced, as follows:

- By 2010, reduce greenhouse gas emissions to 2000 levels;
- By 2020, reduce greenhouse gas emissions to 1990 levels; and
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

Assembly Bill 32 (AB 32)

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), which requires the CARB to design and implement emission limits, regulations, and other measures, such that statewide greenhouse gas emissions will be reduced to 1990 levels by 2020.

In June 2008, CARB published its *Climate Change Draft Scoping Plan* (CARB, 2008b). The *Climate Change Draft Scoping Plan* reported that CARB met the first milestones set by AB 32 in 2007: developing a list of early actions to begin sharply reducing greenhouse gas emissions;

assembling an inventory of historic emissions; and establishing the 2020 emissions limit. After consideration of public comment and further analysis, CARB released the *Climate Change Proposed Scoping Plan* in October, 2008 (CARB, 2008c). The Proposed Scoping Plan proposes a comprehensive set of actions designed to reduce overall carbon emissions in California. Key elements of the Proposed Scoping Plan include:

The *Climate Change Proposed Scoping Plan* states that local governments are "essential partners" in the effort to reduce greenhouse gas emissions, and that they have "broad influence and, in some cases, exclusive jurisdiction" over activities that contribute to greenhouse gas emissions. The plan acknowledges that local governments have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect greenhouse gas emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Many of the proposed measures to reduce greenhouse gas emissions rely on local government actions. The plan encourages local governments to reduce greenhouse gas emissions by approximately 15 percent from current levels by 2020 (CARB, 2008c).

CARB Draft GHG Significance Thresholds

On October 24, 2008, CARB released its *Preliminary Draft Staff Proposal on Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act* for review and public comment (CARB, 2008d). The proposal identifies benchmarks or standards that assist lead agencies in the significance determination for industrial, residential, and commercial projects.

For industrial projects, CARB recommends that projects below the industrial screening level (7,000 metric tons/year CO_2e) can be found to be less-than-significant. For residential and commercial projects, CARB staff's objective is to develop a threshold on performance standards that will substantially reduce the GHG emissions from new projects and streamline the permitting of carbon-efficient projects. Performance standards will address the five major emission sub-sources for the sector: energy use, transportation, water use, waste, and construction. Projects may alternatively incorporate mitigation equivalent to these performance standards, such as measures from green building rating systems.

The agency primarily responsible for developing air quality plans for the Bay Area is the BAAQMD, the agency with permit authority over most types of stationary emission sources of air pollutants in the Bay Area.

Air Quality Plans

The 1977 Clean Air Act Amendments require that regional planning and air pollution control agencies prepare a regional *Air Quality Plan* to outline the measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve all standards specified in the Clean Air Act. The 1988 California Clean Air Act also requires development of air quality plans and strategies to meet state air quality standards in areas designated as non-attainment (with the exception of areas designated as non-attainment for the state PM standards). Maintenance plans

are required for attainment areas that had previously been designated non-attainment in order to ensure continued attainment of the standards. Air quality plans developed to meet federal requirements are referred to as *State Implementation Plans*.

For state air quality planning purposes, the Bay Area is classified as a serious non-attainment area for ozone. The “serious” classification triggers various plan submittal requirements and transportation performance standards. One such requirement is that the Bay Area update the Clean Air Plan (CAP) every three years to reflect progress in meeting the air quality standards and to incorporate new information regarding the feasibility of control measures and new emission inventory data. The Bay Area’s record of progress in implementing previous measures must also be reviewed. Bay Area plans are prepared with the cooperation of the Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG). On January 4, 2006, the BAAQMD adopted the most recent revision to the CAP - the *Bay Area 2005 Ozone Strategy* (BAAQMD, 2006). The control strategy for the *2005 Ozone Strategy* is to implement all feasible measures on an expeditious schedule in order to reduce emissions of ozone precursors and consequently reduce ozone levels in the Bay Area and reduce transport to downwind regions.

In April 2005, CARB established a new eight-hour average ozone state standard of 0.070 ppm. The new standard took effect in May 2006. The one-hour state standard was also retained. The San Francisco Bay Area has not attained the state eight-hour standards and will be taking action as necessary to address those standards as appropriate once the planning requirements have been established.

The BAAQMD is beginning the process to prepare the *2009 Bay Area Clean Air Plan*. This Plan will:

- Update the *Bay Area 2005 Ozone Strategy* in accordance with the requirements of the California Clean Air Act to implement “all feasible measures” to reduce ozone;
- Consider the impacts of ozone control measures on particulate matter, air toxics, and greenhouse gases in a single, integrated plan;
- Review progress in improving air quality in recent years; and
- Establish emission control measures to be adopted or implemented in the 2009-2012 timeframe.

The current designation of the Bay Area is non-attainment with respect to the national 8-hour ozone standard, which is based on the now defunct 0.08-ppm 8-hour standard. In April 2004, the USEPA designated the Bay Area as a “marginal” non-attainment area according to five classes of non-attainment areas for ozone, which range from marginal to extreme. Marginal non-attainment areas were not required to prepare attainment demonstrations for the 8-hour standard though other planning elements were required. The Bay Area was to address all requirements of the national 8-hour standard in subsequent documents. However, effective May 27, 2008, the USEPA lowered the national 8-hour standard from 0.08 to 0.075 ppm. USEPA is expected to issue final

designations based upon the new 0.075 ppm standard by March 2010, after which planning requirements on non-attainment areas will be imposed.

Rules and Regulations

BAAQMD exercises permit authority through its *Rules and Regulations*. Both federal and state ozone plans rely heavily upon stationary source control measures set forth in BAAQMD's *Rules and Regulations*. With respect to the construction phase of the proposed Project, applicable BAAQMD regulations would relate to portable equipment (e.g., gasoline- or diesel-powered engines used for power generation, pumps, compressors, pile drivers, and cranes), architectural coatings, and paving materials. Equipment used during proposed Project construction would be subject to the requirements of BAAQMD Regulation 2 (Permits), Rule 1(General Requirements) with respect to portable equipment unless exempt under Rule 2-1-105 (Exemption, Registered Statewide Portable Equipment); BAAQMD Regulation 8 (Organic Compounds), Rule 3 (Architectural Coatings); and BAAQMD Regulation 8 (Organic Compounds), Rule 15 (Emulsified and Liquid Asphalts).

Local

San Francisco

San Francisco Greenhouse Gas Reduction Ordinance. In May 2008, the City of San Francisco adopted an ordinance amending the San Francisco Environment Code to establish City GHG emission targets and departmental action plans, to authorize the Department of the Environment to coordinate efforts to meet these targets, and to make environmental findings. The ordinance establishes the following GHG emission reduction limits for San Francisco and the target dates to achieve them:

- Determine 1990 City GHG emissions by 2008, the baseline level with reference to which target reductions are set;
- Reduce GHG emissions by 25 percent below 1990 levels by 2017;
- Reduce GHG emissions by 40 percent below 1990 levels by 2025; and
- Reduce GHG emissions by 80 percent below 1990 levels by 2050.

The ordinance also specifies requirements for City of San Francisco departments to prepare departmental Climate Action Plans that assess, and report to the Department of the Environment, GHG emissions associated with their department's activities and activities regulated by them, and prepare recommendations to reduce emissions. As part of this, the San Francisco Planning Department is required to: (1) update and amend the City's applicable General Plan elements to include the emissions reduction limits set forth in this ordinance and policies to achieve those targets; (2) consider a project's impact on the City's GHG reduction limits specified in this ordinance as part of its review under CEQA; and (3) work with other City departments to enhance the "transit first" policy to encourage a shift to sustainable modes of transportation thereby reducing emissions and helping to achieve the targets set forth by this ordinance.

Daly City

Daly City is in the process of adopting a Climate Action Plan. It will be based on the International Council for Local Environmental Initiatives (ICLEI) Greenhouse Gas Emissions Inventory.

3.7.3 Impacts and Mitigation Measures

Significance Criteria

The significance of potential impacts to air quality was determined based on *CEQA Guidelines* and other relevant considerations. Implementation of the proposed Project would be considered to have significant air quality impacts if it were to:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people; or
- Conflict with the state goal of reducing GHG emissions in California to 1990 levels by 2020, as set forth by the timetable established in AB 32 (California Global Warming Solutions Act of 2006), such that the project's GHG emissions would result in a substantial contribution to global climate change; and
- Conflict with San Francisco's Climate Action Plan such that it would impede implementation of the local GHG reduction goals established by San Francisco's Greenhouse Gas Reduction Ordinance

BAAQMD CEQA Guidelines

Criteria Pollutants

BAAQMD has published the *BAAQMD CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans,* which are a set of recommendations that provide specific guidance on evaluating projects relative to the above general criteria (BAAQMD, 1999). For temporary construction-phase impacts, BAAQMD recommends a qualitative approach that focuses on the dust control measures that would be implemented. If appropriate mitigation measures are implemented to control PM_{10} emissions, then the impact from construction would be less than significant. For evaluating operational-phase emissions, BAAQMD recommends that local agencies use criteria of 80 pounds per day or 15 tons per year to identify significant increases in emissions of ROG, NO_X and PM_{10} from individual development projects; an exceedance of the criteria would be considered a significant impact.

For CO, an increase of 550 pounds per day would be considered significant if it leads to or contributes to CO concentrations exceeding the State Ambient Air Quality Standard of 9 ppm averaged over 8 hours or 20 ppm for 1 hour (i.e., if it creates a "hot spot").

Generally, if a project results in an increase in ROG, NOx, or PM_{10} of more than 80 pounds per day, then it would also be considered to contribute considerably to a significant cumulative effect. For projects that would not lead to a significant increase of ROG, NOx, or PM_{10} emissions, the cumulative effect is evaluated based on a determination of the consistency of the project with the regional clean air plan.

Toxic Air Contaminants

For TACs, any project with the potential to expose sensitive receptors (including residential areas) or the general public to substantial levels of toxic air contaminants would be deemed to have a significant impact. This applies to receptors locating near existing sources of toxic air contaminants, as well as sources of toxic air contaminants locating near existing receptors.

Proposed development projects that have the potential to expose the public to toxic air contaminants in excess of the following thresholds would be considered to have a significant air quality impact. These thresholds are based on the BAAQMD's Risk Management Policy. Thresholds of Significance for Toxic Air Contaminants:

1. Probability of contracting cancer for the Maximally Exposed Individual (MEI)[2] exceeds 10 in one million; or

2. Ground-level concentrations of non-carcinogenic TACs would result in a Hazard Index greater than 1 for the MEI.

Odors

For odors, BAAQMD recommends that potential impacts be evaluated if a potential source of objectionable odors is proposed at a location near existing sensitive receptors or if sensitive receptors are proposed to be located near an existing source of objectionable odors. **Table 3.7-4** shows screening distances between potential sources of odors and sensitive receptors. If a project would result in a sensitive receptor and odor source located closer to one another than the screening level distances, a more detailed analysis must be performed. For projects that involve a new receptor being located near an existing source of odors, it is suggested that the District's inventory of odor complaints for the nearest odor emitting facilities be reviewed for the previous three years. Odor impacts should be considered significant if there has been more than one confirmed complaint per year averaged over a three year period, or three unconfirmed complaints per year averaged over a three year period.

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2 MEI is the Maximally Exposed Individual, which represents the worst-case risk estimate based on a theoretical person continuously exposed for 70 years at the point of highest compound concentration in air.

TABLE 3.7-4
PROJECT SCREENING TRIGGER LEVELS FOR POTENTIAL ODOR SOURCES

Type of Operation	Project Screening Distance
Wastewater Treatment Plant	1 mile
Sanitary Landfill	1 mile
Transfer Facility	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g. auto body shops)	1 mile
Rendering Plant	1 mile
Coffee Roaster	1 mile

SOURCE: BAAQMD, 1999.

Greenhouse Gases

At this time few if any local governments statewide have adopted anything beyond a case-by-case significance criterion for evaluating a project's contribution to climate change. The Governor's Office of Planning and Research (OPR) has asked the CARB to "recommend a method for setting thresholds of significance to encourage consistency and uniformity in the CEQA analysis of GHG emissions" throughout the state because OPR has recognized that "the global nature of climate change warrants investigation of a statewide threshold for GHG emissions" (OPR, 2008). CARB began the public process of addressing significance thresholds in October 2008, but many decisions need to be made to have final criteria (CARB, 2008d).

The informal guidelines in OPR's technical advisory and CARB's proposed thresholds provide a general basis for determining a proposed project's contribution of greenhouse gas emissions and the project's contribution to global climate change. In the absence of adopted statewide thresholds, OPR recommends the following approach for analyzing greenhouse gas emissions:

1) Identify and quantify the project's greenhouse gas emissions;
2) Assess the significance of the impact on climate change; and
3) If the impact is found to be significant, identify alternatives and/ or mitigation measures that would reduce the impact to less than significant levels.

OPR's technical advisory states that "the most common GHG that results from human activity is carbon dioxide, followed by methane and nitrous oxide." State law defines GHG to also include hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. These latter GHG compounds are usually emitted in industrial processes, and therefore not applicable to the proposed Project, however, the GHG calculation should include emissions from CO_2, N_2O, and CH_4, as recommended by OPR. The informal guidelines also advise that lead agencies should calculate, or estimate, emissions from vehicular traffic, energy consumption, water usage and construction activities.

As discussed above, at this time there are no statewide guidelines for greenhouse gas emission impacts, but this will be addressed through the provisions of Senate Bill 97 ("SB 97"). OPR has until July 1, 2009 to draft the new greenhouse gas guidelines, and the State Resources Agency will thereafter have until January 1, 2010 to certify and adopt the regulations. In the interim local agencies must analyze the impact of GHGs. For this analysis, the proposed Project would be considered to have a significant impact if the proposed Project would be in conflict with the AB 32 State goals for reducing greenhouse gas emissions. It is assumed that AB 32 will be successful in reducing GHG emissions and reducing the cumulative GHG emissions statewide by 2020.

Approach to Analysis

Air quality impacts of the proposed Project would fall into two categories: impacts due to construction and impacts due to operation. First, during construction, the activities would affect local particulate concentrations primarily due to fugitive dust sources. At the storage tank and pump station, where construction would last the longest, the distance to the nearest sensitive receptor would be more than 200 feet from construction across Lake Merced Avenue. Over the long-term, the proposed Project would result in an increase in indirect emissions primarily due to electricity usage.

For construction-related phase impacts, BAAQMD does not require quantification of construction emissions, but recommends that significance be based on a consideration of the control measures to be implemented (BAAQMD, 1999). Construction impacts are discussed qualitatively and the applicable BAAQMD-recommended dust abatement measures are identified.

Operational emissions were determined by estimating greenhouse gases through indirect electricity usage provided by the applicant and formulas and emission factors from the *California Climate Action Registry Report Protocol* (California Climate Action Registry, 2008).

The proposed Project would not introduce any new sources of lead emissions; consequently, lead emissions are not required to be quantified and are not further evaluated in this analysis.

Construction Impacts

Impact 3.7-1: Construction would generate suspended and inhalable particulate matter. (Less than Significant with Mitigation)

Construction activities would include site preparation, earthmoving and general construction. Site preparation includes activities such as general land clearing and grubbing. Earthmoving activities include cut-and-fill operations, trenching, soil compaction and grading. General construction includes adding improvements such as roadway surfaces, structures and facilities. These activities would result in dust emissions (including PM_{10} and $PM_{2.5}$) primarily from "fugitive" sources (i.e., emissions released through means other than through a stack or tailpipe) such as soil disturbance.

Construction-related fugitive dust emissions at the proposed Project site would vary from day to day, depending on the level and type of activity, silt content of the soil and the weather. Without

mitigation, construction activities could result in significant quantities of dust and as a result, local visibility and PM_{10} and $PM_{2.5}$ concentrations would be adversely affected, temporarily and intermittently, during the construction period. In addition, the fugitive dust generated by construction would include not only PM_{10}, but also larger particles, which could fall out of the atmosphere potentially as far as several hundred feet from the site and could result in nuisance impacts. The BAAQMD's approach to analyses of fugitive dust emissions from construction is to emphasize implementation of effective and comprehensive dust control measures rather than detailed quantification of emissions. The BAAQMD considers any project's construction-related impacts to be less than significant if the required dust-control measures are implemented. Without these measures, the impact is generally considered to be significant, particularly if sensitive land uses are located in the proposed Project vicinity. There are a number of residences located in the vicinity of proposed Project that could be affected by fugitive dust generated by construction activities.

Implementation of Mitigation Measure 3.7.1, which requires dust control measures during construction, would reduce impacts from fugitive dust to on- and off-site receptors to a less than significant level.

Mitigation Measures

Measure 3.7.1: During construction, the construction contractor shall be required to implement the following measures required as part of BAAQMD basic dust control procedures required for construction sites. These include:

Basic Controls that Apply to All Construction Sites

a) Water all active construction areas at least twice daily. Watering should be sufficient to prevent airborne dust from leaving the site.

b) Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).

c) Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.

d) Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.

e) Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

Because the proposed Project site is under four acres, the enhanced BAAQMD measures are not required.

Significance after Mitigation: Less than Significant.

Impact 3.7-2: Construction would generate emissions of criteria pollutants. (Less than Significant)

Construction activities would result in the emission of ROG, NOx, CO, SOx, $PM_{2.5}$, and PM_{10} from equipment exhaust, construction-related vehicular activity and construction worker automobile trips. Emission levels for construction activities would vary depending on the number and type of equipment use, duration of use, operation schedules (the time and frequency) and the number of construction workers traveling to the worksite by motorized vehicle. Criteria pollutant emissions of ROG and NOx from these emissions sources would incrementally add to the regional atmospheric loading of ozone precursors during proposed Project construction. BAAQMD *CEQA Guidelines* recognize that construction equipment emits ozone precursors, but indicate that such emissions are included in the emission inventory that is the basis for regional air quality plans. Therefore, construction emissions of ROG and NOx would not be expected to impede attainment or maintenance of ozone standards in the Bay Area (BAAQMD, 1999). The impact of construction equipment exhaust emissions would therefore be less than significant.

Mitigation: None required.

Impact 3.7-3: Project construction would expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)

Carbon Monoxide (CO) Hotspots

CO is a localized pollutant of concern. Due to the minimal construction vehicle trips and the existing low concentrations[3] of CO in the area that are projected to further decline in the future, the proposed Project construction would not be anticipated to result in or contribute to CO concentrations that exceed the California 1-hour or 8-hour ambient air quality standards. Thus, mobile-source emissions of CO would not be anticipated to result in or contribute substantially to an air quality violation. The short-term construction impact of the proposed Project on CO concentrations would be less than significant.

Toxic Air Contaminants

The greatest potential for TAC emissions would be related to diesel particulate matter (DPM) emissions associated with heavy equipment operations during grading, excavation, and transportation activities. Diesel particulate matter (DPM) is a toxic air contaminant and a known carcinogen. Health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of TACs over a 70-year lifetime would contract cancer, based on the use of standard risk-assessment methodology. The proposed Project would not result in a long-term (i.e., 70 years) substantial source of TAC emissions.

[3] See air quality setting information above that discusses the current success statewide in reducing CO levels.

Because the project location is in an urbanized area, truck haul routes will be near or adjacent to sensitive receptors, who could be subject to elevated levels of DPM. Exposure would be temporary but would span the duration of construction. Combustion emissions from construction equipment would be generated during project construction. The proposed Project would generate approximately 3,520 truck trips during construction for hauling excavated material (see Section 3.5, Transportation and Traffic, Impact 3.5-1 for a break-down of trips generated during project construction).

The WSIP PEIR identified that a health risk between 1 and 10 in a million is considered potentially significant for exposure of sensitive receptors to DPM emissions. An increase in background cancer risk of 1 in one million equates to 20,000 truck loads or 40,000 trips for the construction period (San Francisco Planning, 2008 page 4.9-28). The WSIP PEIR estimated that the total truck trips for all of the recycled water projects (one of which is the proposed Project) would be up to 6,293, which is below the threshold - thus, the PEIR concluded that DPM emissions for the recycled water projects would be less than significant. Since the proposed Project will be generating less than the amount that was analyzed under the PEIR, the exposure of sensitive receptors to DPM emissions would be less than significant.

Mitigation: None required.

Operational Impacts

Impact 3.7-4: Project operation would expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)

Carbon Monoxide (CO) Hotspots

CO is a localized pollutant of concern. Due to the minimal operational vehicle trips and the existing low concentrations[4] of CO in the area that are projected to further decline in the future, the proposed Project operations would not be anticipated to result in or contribute to CO concentrations that exceed the California 1-hour or 8-hour ambient air quality standards. Thus, mobile-source emissions of CO would not be anticipated to result in or contribute substantially to an air quality violation. The long-term operational impact of the proposed Project on CO concentrations would be less than significant.

Toxic Air Contaminants

The greatest potential for TAC emissions would be related to diesel particulate emissions associated with heavy equipment operations during grading, excavation, and transportation activities. Health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of TACs over a 70-year lifetime would contract cancer, based on the use of standard risk-assessment

4 See air quality setting information above that discusses the current success statewide in reducing CO levels.

methodology. The proposed Project would not result in a long-term (i.e., 70 years) substantial source of TAC emissions. In addition, the long-term operation of the proposed Project would not result in increased non-permitted sources of toxic air emissions over the existing scenario. As a result, exposure of sensitive receptors to substantial toxic air emissions from proposed Project operations would be less than significant.

Mitigation: None required.

Impact 3.7-5: Operational pollutant emissions of criteria air pollutants would result from employee vehicle trips. (Less than Significant)

Minimal employee trips would be required for inspection/maintenance; these trips are not anticipated to change from current operations; therefore emissions associated with operation of the proposed Project would have a less-than-significant increase in operational emissions of criteria pollutants.

Mitigation: None required.

Impact 3.7-6: Operational odor emissions. (Less than Significant)

The types of land uses that typically pose potential odor problems include agriculture, wastewater treatment plants, food processing and rendering facilities, chemical plants, composting facilities, landfills, waste transfer stations, and dairies. The proposed Project involves use of tertiary-treated wastewater for irrigation. Implementation of the proposed Project would not increase sources of odor at the North San Mateo County Sanitation District's wastewater treatment plant. There would be no new sources of wastewater as a result of the proposed Project; the proposed Project would involve enhanced treatment of an increased quantity of existing flows at the plant. Use of the recycled water at Harding Park would not be expected to be a source of odor. The same source of recycled water currently is in use at other golf courses in the area, such as the Olympic Club. Therefore, the proposed Project would not create objectionable odors that would affect a substantial number of people, or subject a substantial number of the residences to existing objectionable odors. Odor impacts would be less than significant.

Mitigation: None required.

3.7.4 References – Air Quality

Association of Environmental Professionals (AEP), 2007. Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents.

Bay Area Air Quality Management District (BAAQMD). *Ambient Air Quality Standards and Bay Area Attainment Status,*http://www.baaqmd.gov/pln/air_quality/ambient_air_quality.htm, page updated Dec 30, 2008 and accessed April 20, 2009.

Bay Area Air Quality Management District (BAAQMD), *Bay Area 2005 Ozone Strategy,* January 4, 2006.

Bay Area Air Quality Management District (BAAQMD), CEQA Guidelines, December 1999

California Air Pollution Control Officers Association (CAPCOA), 2008. CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act.

California Air Resources Board (CARB), 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*, April 2005.

California Air Resources Board (CARB), 2008a. *Ambient Air Quality Standards,* http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

California Air Resources Board (CARB), *ARB Fact Sheet: Air Pollution Sources, Effects and Control,* http://www.arb.ca.gov/research/health/fs/fs2/fs2.htm, page last updated December 2005.

California Air Resources Board (CARB), 2008b.*Climate Change Draft Scoping Plan, a Framework for Change.*

California Air Resources Board (CARB), 2008c. *Climate Change Proposed Scoping Plan Appendices.*

California Air Resources Board (CARB), December 2007. *Mandatory Reporting of California Greenhouse Gas Emissions,* Presentation in El Monte, California.

California Air Resources Board (CARB), 2004. *Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas.*

California Air Resources Board (CARB), 2000. *Risk Reduction Plan for Diesel-Fueled Engines and Vehicles,* September 2000.

California Climate Action Registry, April 2008. *California Climate Action Registry General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.0.*

Governors Office of Planning and Research,(OPR), June 19, 2008. *Technical Advisory, CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review*

Dockery and Pope, 2006. Health effects of fine particulate air pollution: Lines that connect. J Air and Waste Management Association, 2006; 54: 709-742.

San Francisco Planning Department, *Water System Improvement Program Program EIR*, Case No. 2005.0159E, October 2008.

3.8 Recreation

This section addresses recreation issues related to construction and operation of the proposed Project. This evaluation is based on discussions with local agency representatives, field reconnaissance, a review of adopted general and regional plans, and aerial photographs.

3.8.1 Setting

San Francisco Recreation and Park Department Facilities

Lake Merced

Lake Merced is a multi-use, regional recreational area owned by the San Francisco Public Utilities Commission (SFPUC) and managed by the San Francisco Recreation and Park Department pursuant to the 1950 SFPUC resolution delegating management authority to the Recreation and Park Department. The park is 614 acres, 395 of which are considered natural areas (i.e. undeveloped) by the San Francisco Recreation and Park Department. Lake Merced consists of four inter-connected freshwater lakes: North Lake, South Lake, East Lake and Impound Lake that are fed by rain water, run-off, and seepage from historic springs and creeks. Lake Merced offers a variety of recreational opportunities to visitors including trails for walking, jogging, dog-walking, biking; boating and fishing opportunities; picnicking and bird and wildlife viewing opportunities. There are three fishing piers – two in North Lake and one in South Lake - and a boat launch. Additionally, the Lake includes 5,100 linear feet miles of paved trails and 11,100 linear feet of unpaved trails, and two picnic areas, one adjacent to North Lake and the other adjacent to the Impound Lake (San Francisco, 2006).

Developed facilities include Harding Park, Lake Merced Boat House, a SFPUC pump station, the Pacific Rod and Gun Club with skeet and trap ranges, the San Francisco Police Department firing range, and several fishing piers. There is also a designated dog play area on the north side of East Lake in an area informally known as "the Mesa." There are several private golf clubs in the Lake Merced vicinity, including Olympic Club to the south, Lake Merced Golf and Country Club to the southeast, and San Francisco Golf Club to the east, as well as athletic facilities associated with San Francisco State University. In addition, Lake Merced is an area of high biological importance and provides habitat for many bird and water fowl species (see Section 3.10, Biological Resources).

Harding Park Golf Course

Harding Park Golf Course is bordered on three sides by Lake Merced and is a facility of the Lake Merced recreation area (see Figure 2-2). The Harding Park complex is 125 acres in total and includes the 18-hole public Harding Park Golf Course and the 9-hole public Jack Fleming Municipal Golf Course (referred to collectively in this EIR as Harding Park). Harding Park hosts the annual San Francisco City Golf Championship and hosts professional golf tournaments (Harding Park, 2009; SFRP, 2009). Over the course of a year, Harding Park has over 65,000 patrons.

Private Recreation Facilities in Vicinity of Project

Olympic Club

The Olympic Club was established in 1860 and its private golf course is located adjacent to Lake Merced in Daly City and San Francisco (see Figure 2-2). The Olympic Club is approximately 250 acres and includes an 18-hole golf course and club house. The Olympic Club has 5,000 members (Olympic Club, 2009).

San Francisco Club

The San Francisco Club is a private golf course totaling 167-acres in San Francisco (see Figure 2-2). The facilities include an 18-hole golf course built according to PGA (Professional Golfers Association) specifications and a club house. The San Francisco Golf Club has 17,000 members.

Lake Merced Golf Club

The Lake Merced Golf Club is a private golf course totaling 136 acres. The golf course has 18 holes and has hosted numerous events including collegiate and professional golf tournaments (Lake Merced Golf, 2009).

3.8.2 Regulatory Framework

Federal

There are no applicable federal regulations related to recreation.

State

There are no applicable state regulations related to recreation.

Local

Both Daly City and San Francisco have policies stated in their general plans that affect the management and maintenance of the recreational facilities in their respective jurisdictions. Those policies are listed below. Refer to Section 3.2, Land Use for an overview discussion of the California Coastal Act and local coastal development plans.

Daly City General Plan

Resource Management Element

Policy 7.1: Areas designated as open space recreation-public shall continue to be maintained and upgraded by the City Parks and Recreation Department.

Policy 8.1: Encourage a diverse, equitable and integrated system of park facilities throughout Daly City that are accessible to all ages, social and economic groups and all geographic areas of the City.

San Francisco General Plan

Natural Resource Area Management Plan

Policy 3.1: Assure that new development adjacent to the shoreline capitalizes on its unique waterfront location, considers shoreline land use provisions, improves visual and physical access to the water, and conforms with urban design policies.

Open Space and Recreation Element

Policy 1.1: Protect the natural character of regional open spaces and place high priority on acquiring open spaces noted for unique natural qualities.

Policy 1.2: Make open space lands already in public ownership accessible to the public for compatible recreational uses.

Policy 1.3: Increase the accessibility of regional parks by locating new parks near population centers, establishing low user costs, improving public transit service to parks and creating regional bike and hiking trails.

Policy 2.13: Preserve and protect significant natural resource areas.

Western Shoreline Area Plan

Policy 5.1: Preserve in a safe, attractive and usable condition the recreational facilities, passive activities, playgrounds and vistas of Lake Merced area for the enjoyment of citizens and visitors to the city.

Policy 5.2: Maintain a recreational pathway around the lake designed for multiple use.

Policy 5.3: Allow only those activities in Lake Merced area which will not threaten the quality of the water as a standby reservoir for emergency use.

Policy 5.4: As it becomes obsolete, replace the police pistol range on the southerly side of South Lake with recreational facilities.

3.8.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this EIR and consistent with Appendix G of the *CEQA Guidelines*, the proposed Project is considered to have a significant recreation impact if it would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated;
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

Approach to Analysis

Analysis of the potential impacts to recreational facilities resulting from implementation of the proposed Project is based on actions that may directly affect neighboring recreational facilities. Construction impacts related to transportation and traffic including impacts to parking near recreational facilities, as well as walkways and bike lanes are discussed in Section 3.5, Transportation and Traffic and Transportation. Potential impacts to Olympic, San Francisco and Lake Merced Golf Courses associated with potential disruptions to their existing supply of recycled water are discussed in Section 3.9, Public Utilities and Services. The impact analysis includes any impacts to existing recreational facilities since there will be no construction or expansion of recreational facilities. The operations of the proposed Project will not impact existing recreational areas and facilities and are not further analyzed in this section.

Construction Impacts

Impact 3.8-1: Increased deterioration of existing recreational areas. (Less than Significant Impact)

Construction of the proposed Project would temporarily disrupt access to or enjoyment of existing recreation facilities in the area, including Harding Park, Lake Merced Perimeter Trail, and paths along the eastern side of Lake Merced Boulevard. If disruption of trail use resulted in the diversion of a large number of recreation users to other recreation facilities, overcrowding could occur; however, given the availability of recreation facilities and trails in the area and the nature of pipeline construction, diversion of recreation users would not likely result in overcrowding and deterioration of facilities and natural resources.

The Project proposes to install a recycled water pipeline along Lake Merced Boulevard and provide recycled water for the irrigation of the Harding Park. The provision of recycled water would replace existing use of potable water supplied to Harding Park by the SFPUC. The replacement of potable water with recycled water supply would not result in the deterioration of the Harding Park facilities or any of the adjacent recreational facilities or parks discussed above, resulting in a less than significant impact.

Mitigation: None required.

Impact 3.8-2: Disruption to existing recreational facilities. (Less than Significant with Mitigation)

The proposed Project will not include construction or expansion of recreational facilities, but could result in impacts to existing facilities. Direct impacts to recreational facilities will occur to Lake Merced facilities including Harding Park. These impacts include closure of bike lanes and pedestrian access to Lake Merced recreational facilities along Lake Merced Boulevard during construction, as well as access to Harding Park facilities by Harding Park staff. Bike lanes along

Lake Merced Boulevard and south of John Muir Drive will experience temporary closure. See Section 3.5, Transportation and Traffic, for a discussion of impacts to bike lanes and sidewalks. Additionally, the western sidewalk along Lake Merced Boulevard (see Figures 2-3c through 2-3f) will experience temporary closure to pedestrians during construction. As such, potentially significant but temporary impacts could occur at Lake Merced. These impacts would be mitigated to a less than significant level with the implementation of Mitigation Measure 3.8-1, which requires advance notification and signage regarding the recreational areas to be impacted by project construction and Measure 3.5-1 in Section 5, Transportation and Traffic.

Impacts to Harding Park's facilities resulting from proposed Project construction will not result in the closure of the golf course facilities to patrons. The proposed Project schedule will avoid construction during two upcoming PGA tournaments to be held at Harding Park, the Presidents Cup from October 6-9, 2009 and the Charles Schwab Cup in October 2010. The pump station and underground storage tank, to be constructed in the Harding Park maintenance yard parking lot, would be constructed between these two events, and access to and operation of the maintenance yard will be maintained throughout construction. San Francisco Recreation and Park Department staff parking will be temporarily relocated to the Harding Park Clubhouse (see Figure 2-2).

Indirect impacts to recreational facilities may also occur at Lake Merced. Activities required for the construction of the pipeline (including construction traffic, parking, and use of equipment) could result in temporary visual or noise impacts on recreational users of Lake Merced. Implementation of Mitigation Measure 3.8-1 and Measure 3.5-1 (in Section 3.5, Transportation and Traffic) would ensure that recreation users are notified in advance of construction and can plan their activities accordingly.

Mitigation Measures

Measure 3.8-2: Daly City and San Francisco Recreation and Park Department will provide advance notification to all property owners, residents, and businesses adjacent to construction areas as well as recreation users likely to use trail segments affected by the proposed Project. Advance notification will include posting signage at affected trail segments, as well as written notification to any recreation organizations associated with Lake Merced or Harding Park. The notification will include the name and phone number of the individual to be contacted regarding questions or concerns about construction activity.

See also Measure 3.5-1 in Section 3.5, Transportation and Traffic, which requires the contractor to prepare a Traffic Control Plan that includes pedestrian/user management actions for trails and sidewalks, including the following:

- Pedestrian and bicycle access and circulation will be maintained during Project construction where safe to do so. If construction activities encroach on a bicycle lane, warning signs will be posted that indicate bicycles and vehicles are sharing the lane.

- Detours will be included for bicycles and pedestrians where feasible for portions of Lake Merced Perimeter Trail where potentially affected by the proposed Project construction.

Impact Significance after Mitigation: Less than Significant.

3.8.4 References – Recreation

City of Daly City, Parks and Recreation Department (DCPR), http://www.dalycity.org/city_services/depts/park_rec/parks.htm, accessed April 15, 2009.

Harding Park Golf Course, http://www.harding-park.com/layout9.asp?id=129&page=3913, accessed April 14, 2009.

Lake Merced Golf Course Website, http://www.lmgc.org/, accessed April 14, 2009.

Olympic Club Website, http://www.olyclub.com/, accessed April 14, 2009.

San Francisco Recreation and Parks Department (SFRPD), Harding Park and Fleming Golf Courses, http://www.sfgov.org/site/recpark_page.asp?id=1863#harding, accessed May 5, 2009.

San Francisco Recreation and Parks Department (SFRPD), Significant Natural Resource Area Plan, 2006, http://www.parks.sfgov.org/wcm_recpark/SNRAMP_Final_Draft/6_Site-Specific/61LakeMerced.pdf.

3.9 Public Utilities and Services

This section addresses potential impacts to public services and utilities from implementation of the proposed Project and the potential for the proposed Project to create an increase in the demand for public services and utilities. The public services and utilities addressed in this section include water, wastewater, solid waste, emergency services, and schools, libraries and hospitals. Stormwater services are discussed in Section 3.12, Hydrology and Water Quality.

3.9.1 Setting

Underground Utilities in Project Area

Streets often function as underground utility corridors. The location of existing utilities must be taken into consideration when siting and installing new utilities. Project engineers identified existing utilities potentially affected by pipeline construction using maps provided by other agencies and inspection of the alignment for any physical markers indicating the presence of utilities. **Table 3.9-1** lists utilities that cross the proposed pipeline alignment in Lake Merced Boulevard.

For purposes of analysis, this EIR uses the California Department of Transportation (Caltrans) policies as stated in the *Caltrans Project Development Procedures Manual* (Caltrans, 1999) to identify "high priority" utilities that would pose a greater risk to workers and the public should an accident occur during construction, and which therefore warrant special consideration. Pursuant to the policy, high priority utilities include pipelines carrying petroleum products, oxygen, chlorine, toxic or flammable gases; natural gas in pipelines greater than 6 inches nominal pipe diameter or with normal operating pressures greater than 60 pounds per square inch gauge; and underground electric supply lines, conductors, or cables that have a potential to ground of more than 300 volts that do not have effectively grounded sheaths (Caltrans, 1999). One high priority utility, a high pressure gas main, crosses the proposed alignment.

During design, existing utilities will be located again and identified with greater precision (e.g., shown on the 100 percent design drawings). Due to the nature of underground construction, the exact location of underground utilities cannot be guaranteed based on construction documents; the precise location can only be determined by careful probing or hand digging, in compliance with Article 6 of the California Occupational Safety and Health Administration (Cal/OSHA) Construction Safety Orders. Utilities Service Alert, which provides utility location services, is not available until the time of construction. The following section describes the public services and utilities serving the proposed Project area.

Daly City

Water

As discussed in Chapter 2, Project Description, the SFPUC provides water service to Daly City. Daly City also generates potable water supply from groundwater wells and distributes water from both sources through the Daly City Water and Wastewater Resources Department.

TABLE 3.9-1
EXISTING UNDERGROUND UTILITIES CROSSING PIPELINE ALIGNMENT

Pipeline Station[a]	Utility	Diameter (inches)	Pipeline Station[a]	Utility	Diameter (inches)
2+26±	Sanitary Sewer	30	30+36±	Electrical	Unknown
2+68±	Sanitary Drain	30	31+35±	Electrical	Unknown
2+84±	Electric Line	Unknown	35+42±	Sanitary Sewer	48
3+48±	Box Culvert (Vista Grande)	84x72	35+59±	Electrical	Unknown
4+49±	Electrical	Unknown	37+55±	Electrical	Unknown
5+05±	Sanitary Drain	60	37+56±	Electrical	Unknown
5+33/5+37±	Electrical	Unknown	38+25±	Electrical	Unknown
10+89	Potable Water	16	38+38±	Electrical	Unknown
11+03[b]	**Gas**	**20**	44+62±	Electrical	Unknown
18+57±	Sanitary Drain	10	45+35±	Electrical	Unknown
23+12±	Sanitary Drain	10	45+39±	Sanitary Sewer	8
24+53±	Sanitary Sewer	30	45+42±	Gas	Unknown
26+42±	Horseshoe Sewer	132x120	45+44±	Electrical	Unknown
26+74±	Potable Water	16	46+16±	Potable Water	60
34+63±	Potable Water	60	46+31±	Potable Water	36
30+25±	Potable Water	12			

[a] Pipeline stationing is preliminary, based on Project Plans for Construction of Harding Park Recycled Water Project, 65 percent Submittal (Carollo, December 2008).
[b] The utility is considered to be high priority based on *Caltrans Project Development Procedures Manual* definition of high-risk facilities that include: (1) petroleum products; (2) oxygen; (3) chlorine; (4) toxic or flammable gases; (5) natural gas in pipelines greater than 6 inches nominal pipe diameter, or pipelines with normal operating pressures greater than 60 pounds per square inch gauge; (6) underground electric supply lines, conductors, or cables that have a potential to ground of more than 300 volts, either directly buried or in a duct or conduit, that do not have concentric grounded or other effectively grounded metal shields or sheaths (Caltrans, 1997).

Utilities in **Bold** are high priority utilities.

SOURCE: Carollo, 2008.

Wastewater

The North San Mateo County Sanitation District provides wastewater collection service to Daly City.

Solid Waste

There are two landfills in the Bay Area where construction debris from the proposed Project may be sent, the Altamont Landfill and the Ox Mountain landfill. The Altamont Landfill is located in Alameda County and has a permitted capacity of 62,000,000 cubic yards (cy); an estimated 16,280,000 cy of this capacity is used, representing 26.3 percent. The operating landfill in San Mateo County is the Ox Mountain landfill located in Half Moon Bay, which has a permitted capacity of 37,900,000 cy with 16,280,000 cy used, representing 26.3 percent as documented by the California Integrated Waste Management Board (CIWMB, 2009). These two landfills are

most likely to receive construction wastes generated by the proposed Project; however this will be determined by the contractor.

Emergency Services

Police protection is provided by the Daly City Police Department (DCPD, 2009). Fire protection is provided by the North County Fire Authority (North County, 2009).

Schools, Libraries, and Hospitals

There are no public schools along the proposed pipeline alignment. Schools near the proposed Project area are listed in **Table 3.9-2**. There are no public libraries or hospitals within 0.25 miles of the proposed pipeline corridor.

TABLE 3.9-2
SCHOOLS NEAR PROJECT CORRIDOR

School	Address	Distance from Pipeline Corridor/Pump Station
Our Lady of Mercy Elementary School	1 Elmwood Dr, San Francisco	0.5 mi
Krouzian-Zekarian-Vasbouragan Armenian School	825 Brotherhood Way, San Francisco	0.3 mi
Bridgemont High School & Jr High	777 Brotherhood Way, San Francisco	0.5 mi
Westlake Elementary School	80 Fieldcrest Dr, Daly City	0.3 mi
San Francisco State University	1600 Holloway Ave, San Francisco	0.5 mi

San Francisco

Water

The SFPUC provides water service to San Francisco

Wastewater

The SFPUC provides wastewater collection service to San Francisco.

Solid Waste

See the solid waste section above for solid waste facilities available for the proposed Project.

Emergency Services

Police protection in San Francisco is provided by the San Francisco Police Department (SFPD, 2009). Fire protection in is provided by the San Francisco Fire Department (SFFD, 2009).

Schools, Libraries, and Hospitals

There are no public schools along the proposed pipeline alignment. Schools near the proposed Project area are listed in Table 3.9-2. There are no public libraries or hospitals within 0.25 miles of the proposed pipeline corridor.

3.9.2 Regulatory Framework

Federal

There are no federal regulations that apply to utilities and service systems.

State

California Integrated Waste Management Act of 1989)

The California Integrated Waste Management Act of 1989 (Public Resources Code [PRC], Division 30), enacted through AB 939 and modified by subsequent legislation, required all California cities and counties to implement programs to reduce, recycle, and compost at least 50 percent of wastes by the year 2000 (PRC Section 41780). The state determines compliance with this mandate to "divert" 50 percent of generated waste (which includes both disposed and diverted waste) through a complex formula. This formula requires cities and counties to conduct empirical studies to establish a "base year" waste generation rate against which future diversion is measured. The actual determination of the diversion rate in subsequent years is arrived at through deduction, not direct measurement; instead of counting the amount of material recycled and composted, the city or county tracks the amount of material disposed at landfills, then subtracts the disposed amount from the base year amount. The difference is assumed to be diverted (PRC Section 41780.2).

Local

Daly City Construction and Demolition Recycling Program

Daly City Ordinance DCMC 15.64 requires a minimum of 60 percent of debris generated by certain construction and demolition projects be recycled. Before starting an applicable demolition, construction, or remodeling project, the applicant must determine how to manage construction and demolition debris and any excess building materials such as taking them to an approved facility for recovery/recycling or reusing the materials (Daly City, 2009).

San Francisco Construction and Demolition Ordinance

Ordinance No. 27-06 mandates the recycling of construction and demolition (C&D) debris generated in the City of San Francisco. This ordinance affects all construction projects such as new construction and partial demolitions. It requires the property owner to make sure that all C&D materials removed from the project are properly recycled. This ordinance prohibits any C&D materials from being placed in trash or sent to a landfill. C&D materials must be taken to a registered facility that reuses or recycles those materials by a registered transporter. At the registered facility, a minimum of 65 percent of the material must be diverted from the landfill (SFDE, 2009a).

3.9.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this EIR and consistent with Appendix G of the *CEQA Guidelines*, the proposed Project is considered to have a significant public services and utilities impact if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board (RWQCB).
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Not have sufficient water supply available to serve the project from existing entitlements and resources, or require new or expanded water supply resources or entitlements.
- Result in a determination by the wastewater treatment provider that would serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs.
- Be out of compliance with federal, state, and local statutes and regulations related to solid waste.
- Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any public services such as fire protection, police protection, schools, parks, or other services.

Based on the proposed Project's characteristics and location, it would not result in impacts related to several of the significance criteria topics listed above for the following reasons:

> *Wastewater Treatment Requirements*. The proposed Project would not generate wastewater; it would result in the diversion more secondary effluent to tertiary treatment processes at the North San Mateo County wastewater treatment plant, thereby reclaiming the water for reuse. This action would not materially affect compliance with wastewater treatment requirements issued by the San Francisco Bay RWQCB, the agency that issues permits for discharge from the plant.
>
> *Wastewater Treatment and Water Treatment Plant Capacities*. No new water or wastewater treatment facilities are required for this proposed Project. The current recycled water production capacity at the Daly City facility is sufficient to accommodate supply to Harding Park; no changes other than modifications to distribution system programming and

the hours of operation of the existing pump dedicated to the Olympic Club would be required for the treatment facility. As described the Chapter 2, Project Description, the time of production, distribution and storage of recycled water for the proposed Project would not affect delivery of recycled water to existing recycled water customers. The proposed Project would not require construction or expansion of water facilities beyond the recycled water facilities proposed as part of the proposed Project.

Need for New Stormwater Facilities. The proposed pipeline corridor, tank and pump station occur within an existing paved roadway and parking lot. As such, proposed Project implementation would not increase impervious surfaces or increase storm water runoff. Ground cover above the pipeline would also be restored to pre-project conditions. Irrigation of Harding Park would not increase stormwater flow because Title 22 regulations prohibit surface water runoff outside of the area of application for the recycled water (see Section 3.12, Hydrology and Water Quality for more information). Therefore, the proposed Project would not increase the need for additional off-site stormwater drainage facilities.

Sufficiency of Available Water Supply. The proposed Project does not require water entitlements nor does it require the expansion of water supplies. The proposed Project would have a beneficial effect on water supply resources by reducing demand for potable water for irrigation. Refer to discussion of Project objectives in Chapter 2, Project Description. Regarding the delivery of recycled water, as described in Chapter 2, existing recycled water customers would have priority over Harding Park.

Impacts Associated with Provision of or Need for Governmental Facilities. Construction of the proposed facilities would involve alterations to streets owned and maintained by Daly City and San Francisco, and a parking lot owned and maintained by San Francisco. The physical impacts associated with modifications to these facilities are addressed throughout Chapter 3 of this EIR.

Approach to Analysis

The potential for the proposed Project to create an increase in demand for public services and utilities during operations is limited, as discussed above (refer to discussion of electricity consumption associated with pumping in Section 3.14, Energy Resources), because the proposed Project essentially involves substituting recycled water supply for an existing potable water supply to Harding Park. Therefore the analysis focuses only on construction-related impacts. The potential for proposed Project implementation to create a short-term increase in demand for public services and utilities also is limited, given the scale of the proposed Project; however, pipeline construction could disrupt existing utilities and services. See Section 3.5, Transportation and Traffic, regarding potential disruption of vehicular access for emergency service providers; Section 3.8, Recreation, regarding potential impacts to parks and other recreation facilities; Section 3.12, Hydrology and Water Quality, regarding stormwater and water quality issues and use of recycled water; and Section 5.1, Growth Inducement Potential and Secondary Indirect Effects of Growth, regarding indirect impacts related to changes in potable water supply conditions.

Construction Impacts

Impact 3.9-1: Adverse effects on solid waste landfill capacity. (Less than Significant)

California Assembly Bill 939 requires all cities and counties in California to divert 50 percent of their waste stream. Daly City is currently undergoing Biennial Review with the CIWMB and does not have current compliance data available. However, as of 2006, Daly City was not in compliance with AB 939, having only attained a 28 percent diversion rate (CIWMB, 2009). The City and County of San Francisco is in compliance with AB 939 and diverted 70 percent of its waste in 2006 (CIWMB, 2009). The proposed Project would generate 8,500 cy of construction waste, a majority of which will be diverted. Solid waste generation would be limited to construction activities and would likely produce spoils and pavement from trenching as well as green waste from tree removal in the Harding Park maintenance yard. Once the recycled water pipeline is installed, a majority of these spoils will be used as backfill and will not require disposal. Given that the proposed Project corridor is within Daly City and San Francisco, construction wastes will be subject to their construction and demolition waste ordinances. Daly City requires a minimum of 60 percent of construction waste be diverted, while San Francisco requires a minimum of 65 percent be diverted. Additionally, all construction waste must be transported and delivered to registered facilities (**Table 3.9-3**), which will process the waste (Daly City, 2009 and SFDE, 2009). The registered facility or facilities to be used for the proposed Project will ultimately be at the discretion of the contractor. However, each facility listed will likely process the waste at their facility or another registered facility as follows – recycle the concrete; use soil/spoils as daily cover[1]; and use green waste as compost or daily cover. Given that a majority of the construction waste will be reused on site and that at least 60 percent of the remaining waste will be diverted, it is estimated that 180 cy of waste could potentially enter a landfill. The landfill that will receive this waste is also determined by the contractor and may include Altamont Landfill or Ox Mountain Sanitary Landfill. For each of these landfills, 180 cy[2] of waste is less than 0.01 percent of their estimated remaining capacity. As a result, the proposed Project will have a less than significant impact on solid waste capacity.

Any landfill disposal resulting from the proposed Project is not expected to have a significant impact on Daly City's ability to comply with AB 939. Facility design and construction methods that produce less waste or waste that can be recycled or reused have been integrated as part of the proposed Project. As such, implementation of the proposed Project would have a less than significant impact on San Francisco's compliance with AB 939. Overall, the proposed Project would have a less than significant impact on compliance with solid waste statutes.

Mitigation: None required.

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1 Daily cover is earthen material placed on the surface of the active face of a municipal solid waste landfill at the end of each operating day to control vectors, fires, odors, blowing litter, and scavenging (CIWMB, 2009).

2 This number is calculated based on the estimated number of truck trips required for construction waste as stated in Section 3.5 Transportation and Traffic. It assumes each truck will carry 15 cy of waste per round trip.

TABLE 3.9-3
REGISTERED CONSTRUCTION AND DEMOLITION WASTE FACILITIES POTENTIALLY USED BY PROJECT

Daly City	San Francisco
• **Blue Line Transfer, Inc**. - South San Francisco • **San Bruno Garbage Co., Inc**. - San Bruno • **Allied San Carlos Transfer Station** - San Carlos • **SF Recycling & Disposal** - San Francisco • **Ox Mountain Sanitary Landfill** - Half Moon Bay (mixed loads of crushed asphalt, concrete, and dirt)	• **Associated Trucking Inc. -** San Francisco • **Blue Line Transfer, Inc. -** South San Francisco • **Davis Street Transfer & Recycling Center** – San Leandro • **Marin Resource Recovery Center -** San Rafael • **OP Trucking CDI Operations -** San Francisco • **Premier Recycle** - San Jose, • **SF Recycling & Disposal, Inc iMRF** - San Francisco • **SRDC Recycling** - Redwood City • **Windsor Materials Recovery Facility** -Windsor • **Zanker Road Landfill & Zanker Material Processing Facility** - San Jose

SOURCES: (Daly City, 2009); (SFDE, 2009b)

Impact 3.9-2: Temporary increase in demand for fire and police protection due to construction. (Less than Significant)

Construction of proposed facilities would generate truck and employee traffic along haul routes and the proposed pipeline, temporarily increasing the accident potential in these areas. However, this increased potential for accidents would result in a limited, short-term demand for additional police or fire services, and only on an as-needed and emergency basis. This short-term increase in demand could be accommodated by existing resources within the proposed Project areas. Regarding the potential disruption to emergency service providers due to construction in travel lanes, see Section 3.5, Transportation and Traffic. The potential impact on the demand for police and fire services would be less than significant.

Mitigation: None required.

Impact 3.9-3: Potential interference with existing utilities. (Less than Significant with Mitigation)

Project design engineers conducted a utility investigation (Carollo Engineers, 2008); Table 3.9-1 shows those utilities that cross the proposed pipeline alignment. Construction activities for the

proposed pipeline could result in damage to or interference with existing utility lines. Some of the larger utility crossings include:

- At the intersection of John Muir Drive and Lake Merced Boulevard: 7-foot by 6-foot box culvert and 60-inch storm drain
- Approximately 500 feet south of the intersection of Lake Merced Boulevard and Brotherhood Way: 10-foot by 11-foot horseshoe sewer.
- Approximately 500 feet north of the intersection of Lake Merced Boulevard and Brotherhood Way, just south of the access road to Lake Merced Pump Station: 60-inch water main (Sunset Supply line).
- Just southeast of the Harding Park Golf Course maintenance yard: 60-inch water main (Sunset Supply line), 36-inch water main, and 16-inch water main.

The proposed pipeline would be constructed either over or under these utilities. In the event that service disruptions should occur residents and businesses would be notified at least two days in advance of any service disruption. In most cases, service disruptions would be temporary and are not expected to exceed one day. As a condition of approval, the project engineer would prepare a detailed engineering and construction plan that describes construction techniques and protective measures for minimizing impacts to utilities. The gas pipeline line at Station 11+03 is considered to be a high priority utility, as defined in the Setting (see Table 3.9-1 for more information). Consequently, extra precautions during construction are warranted to ensure worker and public safety. With implementation of Measures 3.9-3a through 3.9-3h requiring utility-locating safety practices prior to and during construction), impacts related to potential damage to or interference with public utilities would be less than significant.

Mitigation Measures

Measure 3.9-3a: Prior to excavation, the contractor will locate overhead and underground utility lines, such as natural gas, electricity, sewage, telephone, fuel, and water lines that may reasonably be expected to be encountered during excavation work.

Measure 3.9-3b: The contractor will find the exact location of underground utilities by safe and acceptable means, including the use of hand and modern techniques as well as customary types of equipment. Information regarding the size, color, and location of existing utilities must be confirmed before construction activities begin.

Measure 3.9-3c: The contractor will confirm the specific location of the high priority utility –the gas line– and highlight it on all constructions drawings. In the contract specifications, the contractor will be required to provide weekly updates on planned excavation for the upcoming week and identify when construction will occur near a high priority utility. On days when this work will occur, SFPUC construction managers will attend tailgate meetings with contractor staff to review all measures—those identified in the Mitigation Monitoring and Reporting Program and in the construction specifications—regarding such excavations. The contractor's designated health and safety officer will specify a safe distance to work near the gas line, and excavation closer to the pipeline will not be authorized until the designated health and safety officer confirms and documents in

the construction records that: (1) the line was appropriately located in the field by the utility owner using as-built drawings and a pipeline-locating device, and (2) the location was verified by hand by the construction contractor. The designated health and safety officer will provide written confirmation to SFPUC that the line has been adequately located, and excavation will not start until this confirmation has been received.

Measure 3.9-3d: While any excavation is open, SFPUC or its contractors will protect, support, or remove underground utilities as necessary to safeguard employees.

Measure 3.9-3e: SFPUC or its contractors will notify local fire departments any time damage to a gas utility results in a leak or suspected leak, or whenever damage to any utility results in a threat to public safety.

Measure 3.9-3f: SFPUC or its contractors will contact utility owner if any damage occurs as a result of the proposed Project and promptly reconnect disconnected cables and lines with approval of owner.

Measure 3.9-3g: SFPUC or its engineers will coordinate final construction plans and specifications with affected utilities, such as PG&E.

Measure 3.9-3h: SFPUC will notify residents and businesses in project area of potential utility service disruption two to four days in advance of construction.

3.9.4 References – Public Utilities and Services

California Integrated Waste Management Board (CIWMB), http://www.ciwmb.ca.gov/Profiles/Juris/ accessed April13, 2009.

Carollo Engineers, Project Plans for Construction of Harding Park Recycled Water Project, 65% submittal, December 2008.

Daly City, Construction and Demolition Recycling Program, http://www.dalycity.org/city_news/news/C&DBrochure.pdf, accessed May 29, 2009.

Daly City Police Department (DCPD), http://www.dalycity.org/city_services/depts/police/index.html, accessed April 15, 2009.

North County Fire Authority, http://www.northcountyfire.org/index.htm, accessed April 10, 2009.

San Francisco Department of the Environment (SFDE), Construction and Demolition Program, http://www.sfenvironment.com/our_programs/interests.html?ssi=3&ti=5&ii=125, accessed May 29, 2009a.

San Francisco Department of the Environment (SFDE), Construction and Demolition Program – Registered Facilities List http://www.sfenvironment.org/downloads/library/cd_registered_facilities_051109.pdf, accessed May 29, 2009b.

San Francisco Fire Department (SFFD), http://www.sfgov.org/site/sffd_index.asp, accessed April 15, 2009.

San Francisco Police Department (SFPD), http://www.sfgov.org/site/police_index.asp, accessed April 15, 2009.

San Francisco Public Utilities Commission (SFPUC), http://sfwater.org/msc_main.cfm/MC_ID/14/MSC_ID/117, accessed April 10, 2009.

3.10 Biological Resources

This section describes the existing biological resources in and near the proposed Project area, as well as potential impacts on those resources. References used in the preparation of this section include the following:

- An analysis of previous studies conducted in the Project region concerning special-status plant and animal species;
- California Natural Diversity Database (CNDDB) (CDFG, 2009);
- Review of the California Native Plant Society (CNPS) online database (CNPS, 2009);
- Review of U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) data;
- Review of pertinent scientific literature for species of concern;
- Review of the most recent Notice of Review for federally-listed and candidate animals;
- Review of the CDFG's most recent list of special animals and plants (which also includes federally-listed and candidate plants).

Vegetation types and wildlife habitats were characterized on the basis of both records and field observations. A reconnaissance-level survey of the proposed Project site was conducted on March 18, 2009 to gather information on vegetative communities, wildlife habitats and habitat use, and wetlands on and surrounding the site, and to verify the results of previous surveys and reports.

3.10.1 Setting

Regional Setting

The proposed Project site is located within the San Francisco Bay sub-region of the California Floristic Province (Hickman, 1993) and within the Pacific Flyway.[1]

Local Setting

The proposed Project is sited within Lake Merced Boulevard, the road right-of-way, and the Harding Park maintenance yard. The pipeline alignment runs north along Lake Merced Boulevard. Lake Merced consists of four inter-connected freshwater lakes: North Lake, South Lake, East Lake and Impound Lake, with Impound Lake to the west and San Francisco State University to the east.

1 The Pacific Flyway is a major north-south route of travel for migratory birds.

Lake Merced generally, and Impound Lake specifically, offers high-quality habitat for many species, including migratory birds. Continuing north, the proposed Project terminates at the Harding Park maintenance yard at the southern tip of Harding Park. Land uses adjacent to Lake Merced Boulevard include parks, golf courses, and urban development. Urban development is primarily concentrated on the east side of Lake Merced Boulevard, with semi-urbanized open space to the west.

Vegetation Communities and Wildlife Habitats in the Project Area

The plant community descriptions and terminology used in this analysis are based on those used in *A Manual of California Flora* (Sawyer and Keeler-Wolf, 1995), the California Department of Fish and Game's (CDFG) *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* (CDFG, 2003), and Holland's *Preliminary Description of Terrestrial Natural Communities of California* (Holland, 1986). The proposed Project area (pipeline and pump station) is generally developed and supports ruderal[2] grassland and street tree plantings, while the surrounding proposed Project area supports willow riparian scrub, non-native forest, herbaceous zones, wetlands, and open water.

Willow Riparian Scrub and Chaparral Scrub

Approximately half of the vegetation along Lake Merced adjacent to the proposed Project area consists of willow riparian scrub, which occupies a transitional zone between the freshwater marsh and uplands bordering Lake Merced Boulevard. Willow riparian scrub is considered a sensitive vegetation community by CDFG. Willow riparian scrub offers high wildlife habitat value due to its riparian association, and provides habitat for a variety of birds including rufous hummingbird (*Selasphorus rufus*) and such sensitive species as the yellow warbler (*Dendroica petechia*) and the saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*).

Shining willow (*Salix lucida* ssp. *lasiandra*), a species of limited distribution in San Francisco County and a species of management concern at Lake Merced, can be found on the lower slopes of Impound Lake along with arroyo willow (*Salix lasiolepis*), California blackberry (*Rubus ursinus*) and Himalayan blackberry (*Rubus armeniacus =R. discolor*). Upper slopes support coastal scrub species such as coyote brush (*Baccharis pilularis*), California sage (*Artemisia californica*), and wild lilac (*Ceonothus* spp.). Upland scrub can provide foraging and nesting habitat for bushtit (*Psaltriparus minimus*), white-crowned sparrow (*Zonotrichia leucophrys*), golden-crowned sparrow (*Zonotrichia atricapilla*), California towhee (*Pipilo crissalis*), and western scrub jay (*Aphelocoma californica*). Mammals utilizing upland scrub that are known or expected to inhabit Lake Merced include striped skunk (*Mephitis mephitis*), opossum (*Didelphus virginiana*), raccoon (*Procyon lotor*), California vole (*Microtus californicus*), house mouse (*Mus musculus*), brush rabbit (*Sylvilagus bachmani*), grey fox (*Urocyon cinereoargenteus*), red fox (*Vulpes vulpes*), and feral cat (*Felis domesticus*).

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2 Grows along roadsides and disturbed areas.

Non-native Forest

Non-native forest comprises about 10 percent of the vegetation along Lake Merced in the proposed Project area. Invasive species such as Monterey cypress (*Cupressus macrocarpa*) and Monterey pine (*Pinus radiata*) were planted in the proposed Project area, and throughout Lake Merced additional invasive species such as blackwood acacia (*Acacia melanoxylon*), plume acacia (*Albizia lophantha*), lollypop tree (*Myoporum laetum*), and bluegum eucalyptus (*Eucalyptus globulus*) can be found in the non-native forest. Non-native forests at Lake Merced provide refuge and nesting habitat for birds, including rookery and nesting areas for great blue heron (*Ardea herodias*), egrets (*Ardea alba* and *Egretta thula*), and double-crested cormorant (*Phalacrocorax auritus*).

Herbaceous

Lake Merced's herbaceous vegetation is dominated by spreads of invasive iceplant (*Carpobrotus edulis*) interspersed by growths of invasive annuals such as ripgut brome (*Bromus diandrus*), slender wild oat (*Avena barbata*), wild radish (*Raphanus sativus*), mustard (*Brassica* spp.), poison hemlock (*Conium maculatum*), Bermuda buttercup (*Oxalis pes-caprae*), and veldt grass (*Ehrharta erecta*). Herbaceous vegetation can be found along open slopes of Impound Lake, around parking areas, and along the walking trail/sidewalk between Lake Merced and Lake Merced Boulevard. Some of these areas also support native California wildflowers, including fivespot (*Nemophila maculata*), baby blue eyes (*Nemophila menziesii*), bicolored lupine (*Lupinus bicolor*), and tidytips (*Layia* spp.) that are, based on the locations where they occur, more likely a result of seeding after past work projects than remnants of the historical natural communities of the area.

Wetlands/Freshwater Marsh

Freshwater marsh occurs around the fringes of Lake Merced in its entirety, but most extensively at Impound Lake. Freshwater marsh occurs between open water and riparian willow scrub, and supports a variety of plant species including bulrush (*Scirpus californicus*), narrow-leaved and broad-leaved cattails (*Typha latifolia* and *T. angustifolia*), swamp knotweed (*Polygonum amphibium* var. *emersum*), rushes (e.g. *Juncus lesueurii*), and giant vetch (*Vicia gigantea*). A sensitive habitat[3], freshwater marsh provides protective cover, foraging habitat, and nesting habitat for herons, egrets, grebes, and many species of ducks. Sensitive or locally significant species found in the freshwater marshes of Lake Merced include black-crowned night heron (*Nycticorax nycticorax*), green heron (*Butorides virescens*), pied-billed grebe (*Podilymbus podiceps*), Clark's grebe (*Aechmophorus clarkii*), and gadwall (*Anas strepera*). Muskrat (*Ondatra zibethicus*) and western pond turtle (*Actinemys marmorata*), a California species of concern, are also known to inhabit the marshes of Lake Merced (EDAW, 2004).

3 Sensitive habitats include vegetation communities and wetlands that are regulated by resource agencies or are identified in local or regional plans and policies.

Open Water

Despite peripheral freshwater marshes along its interior fringes, the vast majority of Lake Merced is open water and home to a large variety of fish. Most are non-native species stocked for sportfishing, and some have gained a permanent foothold in the lake's ecosystem. Non-native fish with self-sustaining populations include large-mouth bass (*Micropterus salmoides*), common carp (*Cyprinus carpio*), channel catfish (*Ictalurus punctatus*), and Sacramento blackfish (*Orthodon microlepidotus*). Native fish with self-sustaining populations include tule perch (*Hysterocarpus traskii*), prickly sculpin (*Cottus asper*), hitch (*Lavinia exilicauda*), and threespine stickleback (*Gasterosteus aculeatus*). Historically, Lake Merced was connected to the Pacific Ocean and supported populations of tidewater goby (*Eucyclogobius newberryi*); however, this species has become extirpated since connectivity with the ocean was lost in the latter part of the 19th century and sport fishes were introduced beginning in the early 20th century. In addition to the fish species inhabiting the open waters of Lake Merced, fish eating birds such as osprey (*Pandion haliaetus*) and Caspian tern (*Sternia caspia*) routinely forage over the lake (Golden Gate Audubon, 1999).

Special-status Species

Some species are considered "special-status" because of their recognized rarity or vulnerability to various causes of habitat loss or population decline. Some of these species receive specific protection from federal or state endangered species legislation. Other species have been designated as "sensitive" on the basis of the following: adopted policies and expertise of state resource agencies; information provided by organizations with acknowledged expertise; or policies adopted by local governments such as counties, cities, and special districts to meet local conservation objectives.

A focused literature search and field survey identified four special-status plants and three special-status wildlife species with known occurrences in the vicinity of the proposed Project. Numerous locally-significant bird species are also present in the proposed Project vicinity. **Table 3.10-1** lists these species, their potential habitat, and the potential for occurrence within the proposed Project area. No protocol-level or focused wildlife surveys for special-status species were conducted in support of the proposed Project. For the purposes of this EIR, breeding birds are the only protected species that are expected to occur within the proposed Project area.

Plants

To determine special-status plants with potential to occur in the proposed Project vicinity, the following sources were consulted: database search results from USFWS, CNDDB, and CNPS; and environmental documents and focused rare plant surveys relating to Lake Merced (ESA, 2007; EDAW Inc., 2004). Based on search results, four special-status plants occur in the proposed Project vicinity but none occur or have the potential to occur within the proposed Project area (see Table 3.10-1, below). The proposed Project area supports ruderal vegetation and is entirely disturbed. These grassy roadside areas also appear to have been seeded with generic California wildflower seed mixes.

TABLE 3.10-1
FOCUSED LIST OF SPECIAL-STATUS SPECIES CONSIDERED FOR THE HARDING PARK RECYCLED WATER PROJECT

Common Name *Scientific Name*	Listing Status USFWS/CDFG/ CNPS	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
FEDERAL AND STATE LISTED SPECIES OR PROPOSED FOR LISTING			
Animals			
Fish			
Tidewater goby *Eucyclogobius newberryi*	FE/CSC	Shallow waters of bays and estuaries.	**Absent.** The Lake Merced historical population of tidewater goby is considered extirpated, last observed in 1895.
Amphibians			
California red-legged frog *Rana draytonii*	FT/CSC	Breeds in stock ponds, pools, and slow-moving streams.	**Absent.** Considered extirpated.
Reptiles			
San Francisco garter snake *Thamnophis sirtalis tetrataenia*	FE/CE	Densely vegetated ponds near open hillsides with abundant small mammal burrows.	**Absent.** No record of this species occurring at Lake Merced or in the County of San Francisco.
Birds			
California black rail *Laterallus jamaicensis coturniculus*	--/CT	Salt and brackish marshes; also in freshwater marshes at low elevations.	**Low.** Historically known from Lake Merced but not recently observed.
Bank swallow (nesting) *Riparia riparia*	--/CT	Vertical banks and cliffs with sandy soils, near water.	**Low.** Nests at Fort Funston and forages over Lake Merced.
Plants			
San Francisco lessingia *Lessingia germanorum*	FE/CE/List 1B	Coastal scrub, sandy soils free of competing species.	**Low.** Historically known from Lake Merced but not recently observed; may be present in the seed bank.
Beach layia *Layia carnosa*	FE/CE/List 1B	Sand dunes.	**Low**. Recorded generally from sand dunes in San Francisco in 1904; may be present in the seed bank.
STATE SPECIES OF SPECIAL CONCERN			
Animals			
Invertebrates			
Tomales isopod *Caecuditea tomalensis*	--/--	Still-to slow-moving water in vegetated ponds, preferably spring-fed.	**Absent.** Collected in 1984 from the waters of Lake Merced, but SFSU information indicates this species is no longer present (Holzman, 2005).
Reptiles			
Western pond turtle *Actinemys marmorata*	--/CSC	Lakes, ponds, reservoirs, and slow-moving streams and rivers, primarily in foothills and lowlands.	**Present.** This species is known from Lake Merced. Basking habitat is present in riprap, matted bulrush, abandoned piers, and wood debris; limited upland breeding habitat has been noted.
Birds			
Cooper's hawk *Accipiter cooperi*	--/--/LS	Nests in riparian growths of deciduous trees and live oaks.	**Present.** Foraging is known at Lake Merced, though breeding remains undocumented.

TABLE 3.10-1 (Continued)
FOCUSED LIST OF SPECIAL-STATUS SPECIES CONSIDERED FOR THE HARDING PARK RECYCLED WATER PROJECT

Common Name *Scientific Name*	Listing Status USFWS/CDFG/ CNPS	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
	STATE SPECIES OF SPECIAL CONCERN (cont.)		
Animals (cont.)			
Birds (cont.)			
Sharp-shinned hawk *Accipiter cooperi*	–/–/LS	Nests in riparian growths of deciduous trees and live oaks.	**Present.** Occurs at Lake Merced.
Clark's grebe *Aechmophorus clarkii*	–/–/LS	Marine subtidal and estuarine waters; large lakes near coast and inland at low elevations.	**Present.** Breeds at Lake Merced.
Gadwall *Anas strepera*	–/–/LS	Interior valleys, wetlands, ponds and streams.	**Present.** Historically bred within San Francisco; now a winter resident at Lake Merced.
Great blue heron *Ardea herodias*	–/–/LS	Shallow estuaries and fresh and saline emergent wetlands.	**Present.** Breeds at Lake Merced.
Great horned owl *Bubo virginianus*	–/–/LS	Riparian, coniferous, chaparral and desert habitats.	**Present.** Occurs at Lake Merced.
Red-tailed hawk *Buteo jamaicensis*	–/–/LS	Found in nearly all habitats and elevations.	**Present.** Occurs at Lake Merced.
Red-shouldered hawk *Buteo lineatus*	–/–/LS	Riparian woodlands with swamps and emergent wetlands.	**Present.** Occurs at Lake Merced.
Green heron *Butorides striatus*	–/–/LS	Valley foothill and desert riparian habitats; freshwater emergent wetlands, lacustrine and riverine areas.	**Present.** Occurs at Lake Merced.
California quail *Callipepla californica*	–/–/LS	Shrub, scrub, brush, grasslands, open coniferous and deciduous habitats.	**Present.** Recently reintroduced to Harding Park.
American goldfinch *Carduelis tristis*	–/–/LS	Cismontane foothills; riparian and cropland habitats.	**Present.** Breeds at Lake Merced.
Purple finch *Carpodacus purpureus*	–/–/LS	Coastal foothills and lowlands; riparian and coniferous habitats.	**Present.** Breeds at Lake Merced.
Olive-sided flycatcher *Contopus cooperi*	–/–/LS	Forest and woodland habitats.	**Present.** Breeds at Lake Merced.
Yellow warbler *Dendroica petechia*	–/CSC	Riparian woodlands, montane chaparral.	**Present.** Occurs at Lake Merced, observed in Spring 2000. Breeding undocumented.
American kestrel *Falco sparverius*	–/–/LS	Open areas in various ecotones.	**Present.** Occurs at Lake Merced.
Salt marsh common yellowthroat *Geothlypis trichas sinuousa*	–/CSC	Forages in various marsh, riparian and upland habitats. Nests on or near the ground in concealed locations.	**Present.** Breeds at Lake Merced, with suitable habitat present at Impound Lake.
Barn swallow *Hirundo rustica*	–/–/LS	Open areas from coastal grassland and shrubland to mixed coniferous forests.	**Present.** Breeds at Lake Merced.
Cliff swallow *Hirundo pyrrhonota*	–/–/LS	Open areas, grasslands or open forests; desert riparian areas.	**Present.** Breeds at Lake Merced.

**TABLE 3.10-1 (Continued)
FOCUSED LIST OF SPECIAL-STATUS SPECIES CONSIDERED FOR
THE HARDING PARK RECYCLED WATER PROJECT**

Common Name *Scientific Name*	Listing Status USFWS/CDFG/ CNPS	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
	STATE SPECIES OF SPECIAL CONCERN (cont.)		
Animals (cont.)			
Birds (cont.)			
Hooded oriole *Icterus cucullatus*	--/--/LS	Lower elevation riparian areas, palm oases, urban and cropland areas.	**Present.** Breeds at Lake Merced.
Red crossbill *Loxia curvirostra*	--/--/LS	Coniferous forests.	**Present.** Winter resident at Lake Merced.
Black-crowned night heron *Nycticorax nycticorax*	--/--/--	Lowland and foothill areas. Nests in dense emergent wetlands and dense-foliaged trees.	**Moderate.** Locally uncommon; may breed at Lake Merced.
Osprey *Pandion haliaetus*	--/--/LS	Associated with large, fish-bearing waters with coniferous trees.	**Present.** Occurs at Lake Merced.
Double-crested cormorant *Phalacrocorax auritus*	--/CSC	Coastal areas and inland lakes in fresh, saline, and estuarine waters.	**Present.** Large nesting colonies are present at Lake Merced, supporting up to 60 nests per year at a single colony.
Pied-billed grebe *Podilymbus podiceps*	--/--/LS	Lacustrine habitats and freshwater emergent wetlands.	**Present.** Breeds at Lake Merced.
Sora *Porzana carolina*	--/--/LS	Fresh and saline emergent wetlands.	**Present.** Occurs at Lake Merced.
Virginia rail *Rallus limicola*	--/--/LS	Fresh and saline emergent wetlands.	**Present.** Occurs at Lake Merced.
Red-breasted nuthatch *Sitta canadensis*	--/--/LS	Coniferous forests.	**Present.** Winter resident at Lake Merced.
Pygmy nuthatch *Sitta pygmaea*	--/--/LS	Coniferous forests and pinyon-juniper habitats.	**Present.** Occurs at Lake Merced.
Bewick's wren *Thyromanes bewickii*	--/--/LS	Chaparral; also pinyon-juniper woodlands.	**Present.** Breeds at Lake Merced.
Barn owl *Tyto alba*	--/--/LS	Open areas including chaparral, grassland, riparian, wetlands.	**Present.** Occurs at Lake Merced.
Orange-crowned warbler *Vermivora celata*	--/--/LS	Chaparral, coastal scrub, foothill riparian.	**Present.** Occurs at Lake Merced; suspected to breed here also.
Wilson's warbler *Wilsonia pusilla*	--/--/LS	Foothill riparian areas, thickets.	**Present.** Breeds at Lake Merced.
Plants			
San Francisco Bay spineflower *Chorizanthe cuspidata* var. *cuspidata*	--/--/CNPS List 1B	Coastal scrub, dunes and grassland.	**Present.** Occurs along the west shoulder of John Muir Drive. north of the proposed staging area. Also occurs on the northeast slopes of Impound Lake; greater than 250 feet from the proposed Project area.
Kellogg's horkelia *Horkelia cuneata* ssp. *sericea*	--/--/CNPS List 1B	Coastal scrub, dunes, and openings of closed-cone coniferous forests.	**Low.** Formerly known from Lake Merced, but not recently observed despite botanical scrutiny; may be present in the seed bank.

TABLE 3.10-1 (Continued)
FOCUSED LIST OF SPECIAL-STATUS SPECIES CONSIDERED FOR THE HARDING PARK RECYCLED WATER PROJECT

Common Name *Scientific Name*	Listing Status USFWS/CDFG/ CNPS	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
		STATE SPECIES OF SPECIAL CONCERN (cont.)	
Plants (cont.)			
San Francisco wallflower *Erysimum franciscanum*	--/--/CNPS List 4	Coastal scrub and grassland, often on serpentine soils.	**Present.** Occurs on eastern slope of South Lake Merced and grasslands of the Mesa; greater than 1000 feet from the proposed Project area.
Dune gilia *Gilia capitata* spp. *chamissonis*	--/--/CNPS List 1B	Coastal dunes and scrub.	**Present.** Occurs on northeast banks of Impound Lake; greater than 250 feet from proposed Project area.
San Francisco owl's clover *Triphysaria floribunda*	--/--/CNPS List 1B	Grasslands.	**Low.** Though historically known from Lake Merced, this species has not been observed since 1907; may be present in the seed bank.
San Francisco gumplant *Grindelia hirsutula* var. *maritima*	--/--/CNPS List 1B	Coastal scrub and grasslands.	**Low.** Formerly known from Lake Merced but not recently observed and not easily overlooked; may be present in the seedbank.
Compact cobwebby thistle *Cirsium occidentale* var. *compactum*	--/--/CNPS List 1B	Coastal scrub, grassland, and dunes.	**Low.** Formerly known from Lake Merced in the same gully as San Francisco gumplant, but not recently observed; may be present in the seedbank.
Coastal black gooseberry *Ribes divaricatum*	--/--/LS	Moist coastal understories; streamside thickets.	**Present.** Occurs along southeastern slopes of Impound Lake; not in the proposed Project right-of-way.
Dune tansy *Tanacetum camphoratum*	--/--/--	Coastal dunes.	**Present.** Occurs along the northeastern slopes of Impound Lake; greater than 250 feet from proposed Project area.

STATUS CODES:

FEDERAL: (U.S. Fish and Wildlife Service)
FE = Listed as Endangered (in danger of extinction) by the Federal Government.
FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the Federal Government.
FC = Candidate to become a *proposed* species.

STATE: (California Department of Fish and Game
CE = Listed as Endangered by the State of California
CT = Listed as Threatened by the State of California
CSC = California Species of Special Concern
* = Special Animals

California Native Plant Society
1A = Plants presumed extinct in California
1B = Plants that are rare or endangered in California and elsewhere
2 = Plants that are endangered in California, but more common elsewhere
3 = Plants about which more information is needed.
4 = Plants of limited distribution (a watch list).
LS = Locally significant

Golden Gate Audubon Society
LS = Locally significant

SOURCE. CNPS, 2009; CDFG, 2009; USFWS, 2009; ESA 2007.

Wildlife

An initial list of special-status wildlife species known to occur in the general proposed Project vicinity and potentially occurring within the proposed Project area was compiled on the basis of the following: an analysis of previous studies conducted in the proposed Project region concerning special-status species' presence (ESA, 2007; EDAW, Inc. 2004); data from the CNDDB (2009) and USFWS (2009); review of pertinent scientific literature about the sensitive species of concern; review of the most recent Notice of Review for federally-listed candidate animals; review of CDFG's most recent list of special plants and animals; review of Golden Gate Audubon Society's bird observations; and ESA biologists' familiarity with local wildlife resources.

Following review of these resources, a reconnaissance survey was conducted on March 18, 2009 to corroborate previous survey reports and assess available habitat in the proposed Project area. Factors such as available habitat, habitat quality, and species distribution were considered in evaluating the likelihood of special-status species occurrence in the proposed Project area. No focused surveys were conducted for special-status wildlife species.

With the exception of American goldfinch (*Carduelis tristis*), barn swallow (*Hirundo rustica*), Bewick's wren (*Thryomanes bewickii*), Clark's grebe, cliff swallow (*Hirundo pyrrhonota*), common yellowthroat), great blue heron, hooded oriole (*Icterus cucullatus*), olive-sided flycatcher (*Contopus borealis*), pied-billed grebe, purple finch (*Carpodacus purpureus*), Wilson's warbler (*Wilsonia pusilla*), and other breeding birds, no special-status wildlife are expected to occur in the active proposed Project area. Habitat for breeding birds is available along the proposed Project alignment in roadside trees and grassy areas, and in road-median plantings. Immediately adjacent to the proposed Project area, nesting habitat is available along the southeastern banks and fringes of Impound Lake.

Species Accounts

The general ecology and distribution for special-status species identified as having the greatest potential to occur in or near the proposed Project or that are otherwise considered to be of particular concern (i.e., are especially well known to the public) are described below.

California red-legged frog

The California red-legged frog is a federal threatened species and California species of special concern. The proposed Project area is not within proposed critical habitat for this species.

The California red-legged frog is principally a pond frog that can be found in quiet permanent waters of ponds, pools, streams, springs, marshes, and lakes. Moist woodlands, forest clearings, and grasslands also provide suitable habitat for this species in the non-breeding season (Stebbins, 1985). Adult frogs seek waters with dense shoreline vegetation, such as cattails, that provide good cover (Miller et al., 1996; USFWS, 2002), but may be found in unvegetated waters as well. Red-legged frogs breed from January to May. Eggs are attached to vegetation in shallow water and are deposited in irregular clusters (USFWS, 2002). Tadpoles grow to three inches

before metamorphosing. Red-legged frogs are active year-round along the coast but inland populations may aestivate from late summer to early winter. Adults consume insects such as beetles, caterpillars and isopods, while tadpoles forage on algae and detritus.

California red-legged frogs historically occurred throughout the state, throughout the San Francisco Bay Area, and were documented at several locations in San Francisco County including Lake Merced. Surveys in the 1970s and again in 2000 failed to locate red-legged frogs at Lake Merced, but a noted herpetologist reported red-legged frogs from North Lake during the 1950s and 1970s (EDAW, 2004). A San Francisco University biologist reported a juvenile red-legged frog at Impound Lake in 2000 (EDAW, 2004; CDFG, 2009). Despite this observation, the San Francisco Recreation and Parks Department's *Significant Natural Resource Areas Management Plan* concludes that California red-legged frog is no longer present in Impound Lake or at other locations within the Lake Merced Natural Area (EIP, 2006).

Western pond turtle

The Western pond turtle is a California species of special concern. Distribution ranges from the Pacific Northwest through the Central Valley, southern Coast Ranges, and northern Baja California. Pond turtles inhabit ponds, marshes, streams, and ditches that typically have a rocky or muddy substrate and support emergent vegetation (Stebbins, 1985). Threats to the turtle include a large number of natural and introduced predators that prey on eggs, hatchlings, and juveniles; but the greatest threat to the western pond turtle is human interference, primarily by habitat destruction.

Turtles are typically alert and secretive, and retreat to the cover of water when disturbed, diving beneath the surface and hiding in vegetation or beneath submerged rocks and debris. Western pond turtles are omnivorous scavengers. This species hibernates during the winter, emerging in March to feed and reproduce. Reproduction generally takes place between May and August followed by the deposition of five to eleven eggs which are buried in nests in sunny areas near the water.

Western pond turtle is known from Lake Merced (EIP, 2006). Potential habitat for this species occurs throughout the lake, and specifically occurs at Impound Lake. They are typically associated with basking areas and emergent vegetation; however, pond turtles seasonally migrate through sub-optimal habitat and breed in uplands. This species may be expected to occur in Impound Lake adjacent to the proposed Project area, but no habitat is present in the proposed Project area which is largely developed.

Saltmarsh common yellowthroat

The saltmarsh common yellowthroat is a California species of special concern. This subspecies of the common yellowthroat is endemic to the greater San Francisco Bay region and breeds in limited areas from southern Sonoma County to north Santa Cruz County. Breeding and foraging habitat consists of wet meadows, riparian corridors, fresh and saline emergent habitats, and occasionally grasslands. This species occupies the area between moist habitats and uplands, thus suitable habitat is most extensive in areas offering various habitat types. Diet consists of insects and spiders. They build open-cup nests near or on the ground in well-concealed locations, often

among cattails, tules, shrubs, grasses and other herbaceous vegetation. Wetland destruction is responsible for the overall decline of this subspecies.

Saltmarsh common yellowthroat is known to breed at Lake Merced, though the size and distribution of the breeding population are not known. Suitable nesting habitat occurs at Impound Lake in wetlands and adjacent uplands, and adults have been observed at this location (EDAW, 2004; Holzman, 2005). Potential breeding sites are greater than 75 feet from the proposed Project area, with no potential habitat available in the proposed Project area.

Double-crested cormorant

Double-crested cormorant is a CDFG watch-list species and their rookeries are protected. It is a year-round species along coastal California and on inland lakes, where it frequents fresh, salt, and brackish waters. Double-crested cormorant feeds primarily on fish, but will also take crustaceans and amphibians. They dive from the water surface and pursue their prey underwater. Perching sites are free of vegetation, and they roost on offshore rocks, islands, steep cliffs, dead tree stumps or branches, wharfs, jetties, bridges, and transmission lines. The breeding season is typically from April through August; young are tended by both parents and become independent at 10 weeks. Pesticide persistence, habitat destruction and human disturbance contribute to nest failure. Eggs and young are predated by gulls and crows.

Two nesting colonies are located along the western shores of Lake Merced, greater than 0.5 mile from the nearest proposed Project extent.

Bank swallow

Bank swallow is state-listed as a threatened species, and is found in riparian and other lowland habitats in California west of the deserts. It was historically a more common California breeder, but its range in California has been reduced by half since 1900 and bank swallow is now considered a neotropical migrant with remnant breeding populations along the Sacramento and Feather Rivers, as well as along the coast. Bank swallow feeds over riparian, grassland, wetland, cropland, brushland and open-water areas, gleaning insects such as flies, bees and beetles during gliding flights. Bank swallow use holes dug in cliffs and river banks for cover, and will roost on logs, shoreline vegetation, and telephone wires. It is predominantly a colonial breeder, and nests in fine-textured sandy banks or cliffs near water. Breeding season is from May through July, and the altricial young are tended by both parents. Egg, young, and adults are preyed upon by house and feral cats, snakes, skunks, raptors and rats. Nest sites are sometimes overtaken by house sparrows. The greatest threat is habitat destruction, commonly through channelization and bank stabilization measures.

Historical populations have nested at Lake Merced, but they are currently known to forage over Lake Merced while nesting at nearby Fort Funston. Flying insects over the lake are reported to be the primary food source for the colony (EDAW, 2004).

Breeding birds

California Fish and Game Code Sections 3503 and 3503.5, and the federal Migratory Bird Treaty Act, protect raptors and passerines, and their eggs and nests, from incidental "take." These protections apply to special-status birds identified in Table 3.10-1 and other nesting birds that may occur in the proposed Project alignment.

Fifty species of birds are known to nest at Lake Merced and in surrounding uplands, and hundreds of species have been observed at the lake (Golden Gate Audubon Society, 2009), which is an important freshwater stopover along the Pacific Flyway. At least 13 special-status or locally-significant birds are known to breed at the lake, including: American goldfinch, barn swallow, Bewick's wren, Clark's grebe, cliff swallow, common yellowthroat, great blue heron, hooded oriole, olive-sided flycatcher, pied-billed grebe, purple finch, and Wilson's warbler. Breeding birds may be expected along interior lake fringes, and in shrubs and trees adjacent to Impound Lake and along Lake Merced Boulevard.

Heron/Cormorant (Rookery). A non-specific heron/cormorant rookery is mapped at south Impound Lake, approximately 250 feet from the proposed Project area (ESA, 2007). No rookery trees were identified during the reconnaissance survey (limited to areas visible from the road), but a first-year juvenile green heron (*Butorides virescens*) was observed foraging at the mapped location. Unlike egrets, cormorants, and some other herons that nest in colonies, green heron can be a solitary nester (Erlich et al., 1988) and will nest on a tussock[4] in emergent vegetation near or over water. Other birds in the Ardeidae family such as bitterns and night herons will also nest singly on tussocks.

San Francisco Bay spineflower

The San Francisco Bay spineflower is a CNPS List 1B annual herb that grows in coastal scrub, bluffs, and dunes at elevations ranging from 10 to 700 feet. Its blooming period is April through July, occasionally through August. Endemic to California, it range extends from northern Sonoma County south to San Mateo County and inland to Alameda County.

San Francisco Bay spineflower can be found along the northeastern interior slopes of Impound Lake at Lake Merced, and along the southwestern shoulder of John Muir Drive adjacent to the proposed construction staging area. The proposed staging area is a disturbed lot, graded and fenced and probably in constant use as a staging area for construction activities; thus San Francisco Bay spineflower is not expected in the proposed Project area.

San Francisco wallflower

San Francisco wallflower is a CNPS List 4 perennial herb distributed from Sonoma County south to Santa Cruz County and inland to Santa Clara County. It grows in chaparral, coastal scrub, coastal dunes, and valley and foothill grassland vegetation types, and can occasionally be found along roadsides. It grows at elevations ranging from sea level to 1,800 feet, with a blooming period of March through June.

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[4] clump of growing grass

San Francisco wallflower can be found on the steep eastern slopes of South Lake at Lake Merced; it is not expected in the proposed Project area.

Dune (blue coast) gilia

Dune gilia is a CNPS List 1B annual herb that grows in coastal dunes and scrub at elevations ranging from 7 to 650 feet. Its blooming period is April through July. It is found only in Sonoma, Marin, and San Francisco counties and faces threats from urbanization, recreational development, non-native plants, and possible trampling.

Dune gilia grows on northeastern slopes of Impound Lake, more than 250 feet from Lake Merced Boulevard. Dune gilia is not expected in the proposed Project area.

Coastal black gooseberry

Coastal black gooseberry is a locally-significant shrub growing to five feet tall. It is found in the moist coastal understory from Santa Barbara to Oregon at elevations ranging from sea level to 2,100 feet. Pollinated by insects, its flowering period is April.

Coastal black gooseberry grows on the southeastern slopes of Impound Lake adjacent to the proposed Project area; it was not observed in the proposed Project area.

Critical Habitat for Listed Plants, Fish, and Wildlife Species

There is no designated critical habitat for listed species at Lake Merced or in the proposed Project vicinity.

3.10.2 Regulatory Framework

Federal

Federal Endangered Species Act

Under the Federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce have joint authority to list a species as threatened or endangered (16 United States Code [USC] 1533[c]). Pursuant to the requirements of FESA, a federal agency reviewing a proposed project within its jurisdiction must determine whether any federally listed, threatened, or endangered species, or species proposed for federal listing may be present in the project area and determine whether the proposed project will have a potentially significant impact on such species, including the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC 1536[3], [4]). Substantial adverse project impacts on these species or their habitats would be considered potentially significant in this EIR.

The USFWS also publishes a list of candidate species. Species on this list receive "special attention" from federal agencies during environmental review, although they are not otherwise protected under FESA. Candidate species are taxa for which the USFWS has sufficient biological information to support a proposal to list as endangered or threatened. In addition, the National

Marine Fisheries Service (NMFS) maintains a list of fish species of concern. Federal species of concern receive no legal protection under FESA but may meet CEQA criteria for being considered rare or endangered (see below).

Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (16 USC, Sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Birds of prey are protected in California under the State Fish and Game Code, Section 3503.5 (1992). Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by the CDFG. Any loss of fertile eggs, nesting raptors, or any activities resulting in nest abandonment would constitute a significant impact. Impacts on these species from the proposed Project would not be considered significant unless they are known or have a high potential to nest in the proposed Project area or to rely on it for primary foraging.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) administers Section 404 of the federal Clean Water Act. Section 404 regulates activities in wetlands and "other waters of the U.S." Wetlands are a subset of "waters of the U.S." that are defined in the Code of Federal Regulations (CFR) (33 CFR 328.3[a]; 40 CFR 230.3[s]), including: (1) All interstate waters including interstate wetlands, which are defined by the federal government [33 CFR 328.3(b), 1991] as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances support, a prevalence of vegetation typically adapted for life in saturated soil conditions; (2) all impoundments of waters otherwise defined as waters of the U.S. under the definition; (3) wetlands adjacent to waters identified in paragraphs (1) through (6) of the applicable Code of Federal Regulations section.

San Francisco Bay Regional Water Quality Control Board

Under Section 401 of the federal Clean Water Act, the San Francisco Bay Regional Water Quality Control Board (RWQCB) must certify that actions receiving authorization under Section 404 of the Clean Water Act also meet state water quality standards. The RWQCB also regulates waters of the state under the Porter-Cologne Act Water Quality Control Act (Porter Cologne Act). The RWQCB requires projects to avoid impacts on wetlands if feasible and requires that projects do not result in a net loss of wetland acreage or a net loss of wetland function and values. The RWQCB typically requires compensatory mitigation for impacts on wetlands and/or waters of the state. The RWQCB also has jurisdiction over waters deemed 'isolated' or not subject to Section 404 jurisdiction under *Solid Waste Agency of Northern Cook*

County v. U.S. Army Corps of Engineers (SWANCC)[5]. Dredging, filling, or excavation of isolated waters constitutes a discharge of waste to waters of the state and prospective dischargers are required obtain authorization through an Order of Waste Discharge or waiver thereof from the RWQCB and comply with other requirements of Porter-Cologne Act.

State

California Endangered Species Act

Section 2080 of the California Fish and Game Code prohibits the taking of plants and animals listed under the authority of the California Endangered Species Act of 1984 (CESA). Under CESA, CDFG maintains a list of threatened species and endangered species (California Fish and Game Code 2070). The CDFG also maintains two additional lists:

- a list of candidate species that are species CDFG has formally noticed as being under review for addition to either the list of endangered species or the list of threatened species; and,
- a list of "species of special concern" which serve as "watch lists."

Pursuant to the requirements of CESA, an agency reviewing a project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project area and determine whether the proposed Project will have a potentially significant impact on such species.

CEQA Guidelines Section 15380

CEQA Guidelines §15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. Thus, CEQA provides the ability to protect a species from potential project impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

CEQA also calls for the protection of other locally or regionally significant resources, including natural communities. Although natural communities have limited legal protection from CDFG, CEQA calls for an assessment of whether any such resources would be affected, and requires a finding of significance if there will be substantial losses. Natural communities identified by CNDDB as sensitive are considered by CDFG to be significant resources and fall under the *CEQA Guidelines* for addressing impacts. Local planning documents such as general plans often identify these resources as well.

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5 Based on the Supreme Court ruling (SWANCC) concerning the Clean Water Act jurisdiction over isolated waters (January 9, 2001), non-navigable, isolated, intrastate waters based solely on the use of such waters by migratory birds are no longer defined as waters of the United States. Jurisdiction over non-navigable, isolated, intrastate waters may be possible if their use, degradation, or destruction could affect other waters of the Unites States, or interstate or foreign commerce. Jurisdiction over such other waters are analyzed on a case-by-case basis. Impoundments of waters, tributaries of waters, and wetlands adjacent to waters should be analyzed on a case-by-case basis.

California Native Plant Society

The legal framework and authority for the state's program to conserve plants is derived from various legislative sources, including CESA, the California Native Plant Protection Act (Fish and Game Code Sections 1900 – 1913), the *CEQA Guidelines*, and the Natural Communities Conservation Planning Act.

Vascular plants listed as rare or endangered by CNPS (Skinner and Pavlik, 1994), but which may have no designated status or protection under federal or state endangered species legislation, are defined as follows:

- *List 1A*: Plants Presumed Extinct
- *List 1B*: Plants Rare, Threatened, or Endangered in California and elsewhere
- *List 2*: Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere
- *List 3*: Plants About Which More Information is Needed – A Review List
- *List 4*: Plants of Limited Distribution – A Watch List

In general, plants appearing on CNPS List 1A, 1B, or 2 are considered to meet the criteria of Section 15380 of the *CEQA Guidelines*, and effects on these species are considered "significant" in this EIR. Additionally, plants listed on CNPS List 1A, 1B or List 2 meet the definition of Section 1901, Chapter 10 (Native Plant Protection Act) and Sections 2062 and 2067 (California Endangered Species Act) of the California Fish and Game Code.

Local

City and County of San Francisco General Plan

Policy for San Francisco's Natural Resources

Objective 8: Ensure the protection of plant and animal life in the city.

> *Policy 8.1*: Cooperate with and otherwise support the California Department of Fish and Game and its animal protection programs. The California Department of Fish and Game has overall authority to protect animals in San Francisco. The Municipal Code reinforces this control in protecting animals in public areas.
>
> *Policy 8.2*: Protect the habitats of known plant and animal species that require a relatively natural environment. Parks and undeveloped areas in San Francisco remain relatively undisturbed and provide a variety of environments for flora and fauna; these areas should be protected.
>
> *Policy 8.3*: Protect rare and endangered species. A number of native plant and animal species are designated rare or endangered. Interested individuals, groups, and knowledgeable public agencies should work cooperatively to assure the fullest possible protection of these species.

San Francisco Tree Ordinance

Landmark trees, significant trees, and street trees are defined and protected under San Francisco Public Works Code Article 16, Section 8. Permit applications that could potentially impact a protected tree must include a Planning Department Tree Disclosure Statement. The Zoning Administrator is required to identify landmark, significant, and street trees on proposed development or construction sites and to notify the Department of Public Works; together they will impose protection measures against damage to trunks, roots and branches, and apply rules and procedures for the removal of such trees. Landmark trees are recorded by a notice on the subject property, and also recorded in an official Landmark Tree book maintained by the Department of Public Works.

A significant tree is defined as a tree:

- on property under the jurisdiction of the Department of Public Works; or
- on privately-owned property with any portion of its trunk within 10 feet of the public right-of-way; and
- that satisfies at least one of the following criteria:
  - a dbh[6] in excess of twelve (12) inches;
  - a height in excess of twenty (20) feet; or
  - a canopy in excess of fifteen (15) feet.

Trees in the road median of Lake Merced Boulevard between Brotherhood Way and North Lake Merced Hills Drive are under the jurisdiction of the Department of Public Works.

SFPUC is exempt from municipal and county tree ordinances so the project would not conflict with these local regulations. Nevertheless, the trees removed from the project area by construction of the project would be replaced as specified in Mitigation Measure 3.10-3, Impacts to Landmark or other Significant Trees.

Official Bird of the City and County of San Francisco

The California quail is designated as the official bird of the City and County of San Francisco by San Francisco Administrative Code, Chapter 1, Section 1.5-3. The San Francisco Quail Recovery Task Force has identified wildlife management strategies for the Harding Park Golf Course's Integrated Pest Management Plan that include predator control, revegetation, and reintroduction of quail. Harding Park was selected as one of four city sites to begin recovery efforts based on recently supported quail populations, the relative lack of conflicting activities, and its large size and location offering adequate forage, cover and water.

6 **dbh:** diameter at breast height; refers to diameter of tree trunk

City of Daly City Tree Maintenance Guidelines

The Daly City Parks and Recreation Department has established tree maintenance guidelines and tree maintenance procedures under City Ordinance 12.40. These tree guidelines apply to all public trees in Daly City, such as those in Daly City rights-of-ways, medians, parks, and city-owned easements. Daly City's tree maintenance policy provides for trees to be trimmed and pruned as needed in order to meet safety needs, clear limbs for traffic clearance (i.e. trucks, street sweeper, visual access to stoplights and street signs), and remove known hazards.

The tree ordinance delineates the circumstances under which tree pruning, trimming, thinning or crowning is appropriate. Property owners are not allowed to do any tree work on City of Daly City trees, without written approval. With permit approval, property owners adjacent to City-owned easements, parks, medians, rights-of-ways containing trees can have trees trimmed by a certified tree arborist or a certified tree company. Permit approval conditions for action involving any City trees include discussion and inspection prior to and during work, providing the Parks and Recreation Department with a project schedule, proper cleaning of debris resulting for cutting.

3.10.3 Impacts and Mitigation Measures

Significance Criteria

Daly City has not formally adopted thresholds of significance for assessing impacts on biological resources, but is guided by *CEQA Guidelines* (Section 15065), which direct lead agencies to find that a project may have a significant effect on the environment if it has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of an endangered, rare or threatened species.

Additional criteria to assess significant impacts on biological resources from construction of the proposed Project are specified in the *CEQA Guidelines* Section 15382 (Significant Effect on the Environment) "…a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the proposed Project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance."

Appendix G of the *CEQA Guidelines* (as revised) indicates that a project would have a significant effect on the environment if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS;

- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Approach to Analysis

Impacts on sensitive biological resources resulting from construction and operation of the proposed Project are evaluated herein based on previous biological resource studies, database records, and field reconnaissance surveys. Operational activities will include maintenance and will take place within the internal structures of the facilities and not impact biological resources. Therefore, operational impacts are not discussed further and this section only discusses construction impacts.

Construction Impacts

Impact 3.10-1: Disturbance to special-status birds. (Less than Significant with Mitigation)

Potential nesting habitat for numerous common and special-status birds occurs throughout and adjacent to the proposed Project area in association with Impound Lake and associated riparian areas, large trees, shrubs, and roadside vegetation. Nesting birds may include Wilson's warbler, American goldfinch, barn swallow, Bewick's wren, Clark's grebe, cliff swallow, common yellowthroat, double-crested cormorant, great blue heron, hooded oriole, olive-sided flycatcher, pied-billed grebe, purple finch, and additional bird species protected by California Fish and Game Code Section 3503 and the federal Migratory Bird Treaty Act (16 USC, Sec. 703, Supp. I, 1989).

Proposed Project construction activities, such as earthmoving, grading, and trenching during the breeding season (generally February 1 to August 31) have the potential to result in direct mortality of these species. In addition, human disturbances and construction noise have the potential to cause indirect impacts such as nest abandonment and death of young, or loss of reproductive potential at active nests located near proposed Project activities. If ground-disturbing activities (i.e., ground clearing, trenching, or grading, including removal or trimming of trees or shrubs), are scheduled to occur during the non-breeding season (September 1 through January 28), no mitigation is required. However, if activities would occur from February 1 to August 31, then implementing Mitigation Measure 3.10-1 would reduce potential impacts to a less-than-significant level.

Mitigation Measures

Measure 3.10-1: The contractor will implement the following protection elements to avoid disturbing common and special-status nesting birds:

- Whenever feasible, vegetation will be removed during the non-breeding season (September 1 to January 31).
- For ground disturbing activities occurring during the breeding season (February 1 to August 31), a qualified wildlife biologist will conduct preconstruction surveys of all potential nesting habitat for birds within 500 feet of earthmoving activities.
- If active bird nests are found during preconstruction surveys, a 500-foot no-disturbance buffer will be created around active raptor nests during the breeding season or until it is determined that all young have fledged. A 250-foot buffer zone will be created around the nests of other special-status birds. These buffer zones are consistent with CDFG avoidance guidelines; however, they may be modified in coordination with CDFG based on existing conditions at work locations.
- If preconstruction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required. Trees and shrubs that have been determined to be unoccupied by nesting or other special-status birds may be pruned or removed.

Impact Significance after Mitigation: Less than Significant.

Impact 3.10-2: Interference with the movement of native resident bird and bat species. (No Impact)

Tree removal at the existing maintenance building, proposed as part of the proposed Project, would eliminate a natural golf ball "barrier" that protects cars parked at the maintenance building from stray golf balls. Required replacement trees (see Impact 3.10-3, below) would need 10 to 15 years of growth to function as a golf ball barrier. In the interim, the proposed Project proposes to hang protective netting in this area. Net specifications include a 1-inch weave with a 2.5-inch stretch capacity. No impacts on birds or bats are known from the use of protective golf course netting and no impacts are expected.

Impact Significance: No Impact.

Impact 3.10-3: Impacts to landmark or other significant trees. (Less than Significant with Mitigation)

California Government Code Section 53090 et seq. provides that San Francisco through the SFPUC receives intergovernmental immunity from the planning and building laws of other cities and counties, including tree ordinances. However, to avoid conflicts with local land use plans and

building and zoning codes, the SFPUC seeks to work cooperatively with local jurisdictions. In addition, it is the policy of SFPUC to replace native trees removed by SFPUC project activities, although SFPUC is not required to obtain permits associated with tree ordinances. For the purposes of this analysis removal of or damage to a tree considered protected under Daly City or San Francisco ordinances and regulations would constitute a significant impact. A maximum of eleven trees have been identified for removal at the Harding Park maintenance yard as a result of the proposed Project. They range in diameter from 3.5 inches dbh to 30.5 inches dbh and include five Monterey cypress (*Cupressus macrocarpa*), two coast live oaks (*Quercus agrifolia*), and four strawberry trees (*Arbutus 'Marina'*). Five of these trees have a dbh that is over 12 inches (see Figure 2-4 in Chapter 2, Project Description). As stated above, San Francisco policies protect trees that have a dbh in excess of twelve (12) inches; a height in excess of twenty (20) feet; or a canopy in excess of fifteen (15) feet.

Additionally, a moderate number of medium-to-large-sized cypress, coast live oaks, and other trees occur near roads and in off-road alignments proposed for pipeline construction, and in the vicinity of construction staging areas. It is likely that some trees will need to be pruned. Implementation of Mitigation Measure 3.10-3 will reduce this potential impact to a less-than-significant level.

Mitigation Measures

Measure 3.10-3: The contractor will implement the following measures to avoid or reduce impacts on landmark or other significant trees, and street trees:

1) Prior to the commencement of construction activities, trees necessary to remove or at risk of being damaged, will be identified. See Figure 2-4 in Chapter 2, Project Description for the identification of the trees to be removed..

2) A Department of Public Works inspector or an arborist certified by the International Society of Arboriculture will inventory these trees, with the results of the inventory providing species, size (diameter at breast height), and number of protected trees. Also, in consultation with the Public Works inspector or Zoning Administrator, the arborist will determine if any are heritage or significant trees.

3) If any protected trees are identified that will be potentially removed or damaged by construction of the proposed Project, design changes will be implemented, if feasible, to avoid the impact.

4) Any protected trees that are removed will be replaced at a ratio of 1:1. Native trees will be replaced with one of the same genus and species; non-native trees will be replaced with a native tree. Foliage protectors (cages and tree shelters) to protect the planted trees from wildlife browse will be installed. The planted trees will be monitored regularly during a minimum two-year establishment period. Maintenance during the plant establishment period will include irrigation. After the establishment period, the native tree plantings are typically capable of survival and growth without supplemental irrigation.

5) Implement the proposed planting plan for the proposed Project.

Impact Significance after Mitigation: Less than Significant.

3.10.4 References – Biological Resources

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3.11 Geology and Soils

This section describes the geologic and seismic conditions in the proposed Project vicinity and evaluates the potential for the proposed Project to result in significant impacts related to geology, soils and seismicity.

The description of existing conditions relies on a preliminary geotechnical study performed in support of the proposed Project (Fugro West, 2008), as well as information gathered from the United States Geological Survey (USGS), the California Geological Survey (CGS), the Natural Resource Conservation Service (NRCS), and the Association of Bay Area Governments (ABAG).

3.11.1 Setting

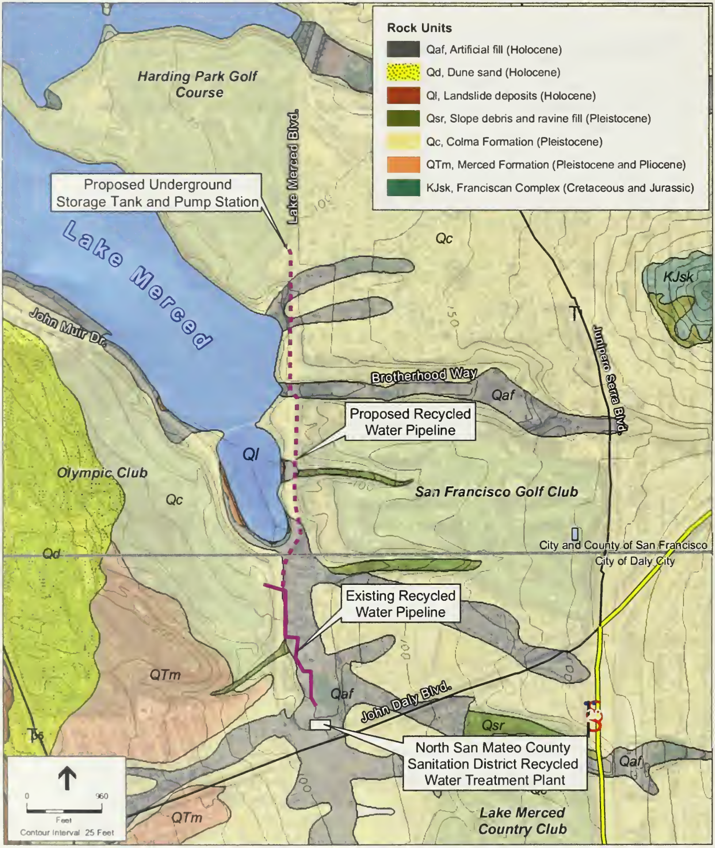
Regional Physiography

The proposed Project is located on the San Francisco Peninsula, which is part of the Coast Range Geomorphic Province of California. The topography of the Coast Ranges is characterized by northwest-southeast-trending mountain ridges and intervening valleys that have formed over millions of years due to movements of the earth's crust (referred to as tectonics). Much of the bedrock underlying the northern Coast Ranges is referred to as the Franciscan Complex—a mixture of ancient seafloor sediments and volcanic rocks that have undergone alteration by heat and pressure deep within the earth. This assemblage of rocks forms most of the hills and mountains of the Peninsula whereas geologically young sedimentary deposits form the valleys and plains of the region, and underlie most of the urban core of the Bay Area. These geologically young, loosely consolidated sediments form when streams, estuaries and bay waters deposit materials eroded off of the surrounding hills and mountains.

Site Geology

The proposed Project straddles the San Francisco-San Mateo County line on the coastal side of the San Francisco Peninsula, immediately east of Lake Merced. Elevations along the pipeline alignment range from 33 feet just north of the intersection of John Muir Drive and Lake Merced Boulevard to 104 feet at Harding Park (Fugro West, 2008). The proposed pipeline alignment crosses several relict drainage channels that drained into Lake Merced, but subsequent urbanization has resulted in the placement of artificial fills that has reduced the topographic variations.

The natural geologic unit underlying the proposed Project boundaries consists entirely of the Colma Formation (**Figure 3.11-1**). The Colma Formation is a poorly sorted, loosely consolidated rock unit composed of fine to medium-grained sand with lesser amounts of gravel, silt, and clay (Bonilla, 1998). While the Colma Formation is described by geologists as a loose and friable rock unit, it is a relatively dense material from an engineering standpoint, and is described as medium dense to very dense by Fugro West (2008). Thin layers of artificial fill overlie the Colma Formation in most places within the proposed Project boundaries. As mentioned above, great



SOURCE: NAIP, 2005, Carollo Engineers; Bonilla, 1998

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Figure 3.11-1
Local Geology

thicknesses of fill have been placed in relict stream valleys, most notably at Brotherhood Way, west of the San Francisco Golf Club, and just north of John Muir Drive. In those locations, artificial fills are very thick, exceeding 25 feet in places (Furgro West, 2008).

Geologic Hazards

Slope Failure

Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, either triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces. Exposed rock slopes undergo rockfalls, rockslides, or rock avalanches, while soil slopes experience shallow soil slides, rapid debris flows, and deep-seated rotational slides. Slope stability can depend on a number of complex variables, including the geology, structure, and amount of groundwater, as well as external processes such as climate, topography, slope geometry, and human activity. The factors that contribute to slope movements include those that decrease the resistance in the slope materials and those that increase the stresses on the slope.

Landslides can occur on slopes of 15 percent or less, but the probability is greater on steeper slopes that exhibit old landslide features such as scarps, slanted vegetation, and transverse ridges. Landslides typically occur within slide-prone geologic units that contain excessive amounts of water or are located on steep slopes, or where planes of weakness are parallel to the slope angle.

As indicated on a USGS landslide zone map, the proposed Project area occurs primarily on "flatland," which is defined as an area of gentle slope with low elevations that have little or no potential for the formation of slumps, landslides, or earth flows, except along stream banks and terrace margins (USGS, 1997). Along John Muir Drive and Lake Merced Boulevard, however, several landslide deposits are identified on the banks of Lake Merced (Figure 3.11-1). These deposits are slumping masses of artificial fill material, some of which are reported to have been mobilized during a 5.3 magnitude earthquake centered in Daly City in 1957 (Youd and Hoose, 1978). As a result of this earthquake, a few slope failures were observed in the immediate vicinity of the proposed Project area including the following:

- An approximately 60-foot long by 150-foot wide landslide in the fill area at the entrance to the San Francisco Golf Club, resulting in soil slumping;

- Two landslides just north of the intersection of Lake Merced Boulevard and John Muir Drive, resulting in soil slumping. One landslide was approximately 100 feet long by 100 feet wide, and the other was approximately 60 feet long by 125 feet wide.

Soils

Soil surveying performed by the NRCS provides information on surface and near-surface soil materials in the proposed Project area (NRCS, 2009). Most of the proposed pipeline would be located in and/or adjacent to Lake Merced Boulevard. In these areas, the soils generally comprise

mixtures of urban land and orthent[1] soils that form on alluvial materials. These soils have a low shrink-swell potential and tend not to swell when water is absorbed.

Corrosion testing was conducted on two representative soil samples from the borings conducted by Fugro West in 2008. The testing concluded that both sulfate and chloride ion concentrations for buried concrete were low. In addition, resistivity and redox tests were performed from on two of the test borings. These tests are used to evaluate and indicate the corrosion potential of the soil environment on buried ferrous metals such as steel or cast-iron pipes. The results from the tests concluded that soil is generally considered noncorrosive. However, one sample tested had a pH of 5.9. Soil with a pH less than 6.0 can be considered to be corrosive to buried iron, steel, and mortar-coated steel (Fugro West, 2008).

Regional Faulting and Seismic Hazards

Seismicity

The proposed Project would be located in the San Francisco Bay Area, which is considered one of the most seismically active regions in the United States. Faults in the Bay Area have produced measurable historic ground motion and movement. The USGS along with the CGS and the Southern California Earthquake Center formed the 2007 Working Group on California Earthquake Probabilities to summarize the probability of one or more earthquakes of magnitude 6.7 or higher occurring in the state of California over the next 30 years. Accounting for the wide range of possible earthquake sources, it is estimated that the Bay Area has a 63 percent chance of experiencing such an earthquake (USGS, 2008). According to the working group, the individual faults posing the greatest threat to the Bay Area are the Hayward, the San Andreas, and the Calaveras Faults. Other principal faults capable of producing significant earthquakes in the Bay Area include the Concord – Green Valley, Marsh Creek – Greenville, and the San Gregorio Faults.

Buildings or structures that lie within a fault zone designated by the State's Alquist-Priolo Earthquake Fault Zoning Act, have a high risk for surface fault rupture. Although the proposed Project site is not located within an Alquist-Priolo Earthquake Fault Zone, the nearest fault (the San Andreas Fault) is located within 1.5 miles of the proposed Project site. The approximate distances of the site to the closest known mapped active faults are summarized below in **Table 3.11-1** and shown in **Figure 3.11-2**. Each of these faults is briefly described below.

San Andreas Fault

The San Andreas Fault Zone, located about 1.5 miles southwest of the proposed Project site, is a major structural feature that forms at the boundary between the North American and Pacific tectonic plates. It is a strike-slip[2] fault, extending from the Salton Sea in Southern California near

[1] Orthents are a soil type that is typically shallow and lacks a horizon development because it is located on a steep slope or derived from parent materials that contain no permanent weatherable materials.
[2] Refers to relative motion on either side of a fault which is primarily horizontal (as opposed to vertical)

TABLE 3.11-1
ACTIVE FAULTS IN THE PROJECT SITE VICINITY

Fault	Approximate Distance and Direction from Site	Recency of Movement	Maximum Moment Magnitude[a]
San Andreas (Peninsula Section)	1.5 miles southwest	Historic	7.1
Hayward (Northern Section)	17 miles northeast	Historic	6.9
San Gregorio (Seal Cove Fault)	14.2 miles south	Holocene	7.3
Calaveras (Northern Section)	28.4 miles east	Historic	6.8
Concord / Green Valley (Avon Section)	30.3 miles northeast	Historic	6.9
Marsh Creek/Greenville	41.9 miles east	Historic	6.9

[a] Moment Magnitude (Mw) is related to the physical size of a fault and the type of motion during a fault rupture. It provides a physically meaningful measure of the size of a faulting event. The Maximum Moment Magnitude that a particular fault is reasonably capable of producing is derived from the joint CGS/USGS Probabilistic Seismic Hazard Assessment for the State of California.

SOURCES: Bryant, 2005; Peterson, 1996

the border with Mexico to north of Point Arena, where the fault trace continues out into the Pacific Ocean. The main trace of the San Andreas Fault through the Bay Area trends northwest from the Santa Cruz Mountains to the eastern side of the San Francisco Peninsula.

In the San Francisco Bay Area, the San Andreas Fault Zone was the source of the two major earthquakes in recent history that affected the San Francisco Bay region. The 1906 San Francisco earthquake was estimated at Mw 7.9 and resulted in approximately 290 miles of surface fault rupture, the longest of any known continental strike slip fault. Horizontal displacement along the fault approached 17 feet near the epicenter (Bryant, 2005). The more recent 1989 Loma Prieta earthquake, with a moment magnitude (Mw) of 6.9, was centered in the Santa Cruz Mountains and resulted in widespread damage throughout the Bay Area. The USGS Working Group on California Earthquake Probabilities (2008) identifies the San Andreas Fault as having a 21 percent chance of generating one or more earthquakes of Mw 6.7 or greater in the next 30 years.

Hayward Fault

The Hayward Fault Zone, located 17 miles northeast of the proposed Project site, extends for 60 miles from San Pablo Bay in Richmond south to the San Jose area. The Hayward Fault has historically generated one sizable earthquake, in 1968, when a Mw 7 earthquake on its southern segment ruptured the ground for a distance of about 30 miles (Bryant, 2005). Lateral ground surface displacement during this event was at least 3 feet.

A characteristic feature of the Hayward Fault is its well-expressed and relatively consistent fault creep. Although large earthquakes on the Hayward Fault have been rare since 1868, slow fault creep has continued to occur and has caused measurable offset. Fault creep on the East Bay

SOURCE. ESRI, 2008, Bryant, 2005

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Figure 3.11-2
Regional Faults

segment of the Hayward Fault is estimated at 9 millimeters per year (mm/yr) (Peterson, et al., 1996). However, a large earthquake could occur on the Hayward Fault with an estimated Mw 6.9 (Table 3.11-1). The USGS Working Group on California Earthquake Probabilities (2008) identifies the combined Hayward–Rodgers Creek Fault Systems as having a 31 percent chance of generating one or more earthquake of Mw 6.7 or greater in the next 30 years.

Calaveras Fault

The Calaveras Fault, located 28.4 miles east of the proposed Project site, is a major right-lateral strike-slip fault that has been active during the last 11,000 years. The Calaveras Fault is located in the eastern San Francisco Bay region and generally trends from north to south along the eastern side of the Oakland Hills into the western Diablo Range, eventually joining the San Andreas Fault Zone south of Hollister. The northern extent of the fault zone is somewhat speculative and could be linked with the Concord Fault.

There is a distinct change in slip rate and fault behavior north and south of the vicinity of Calaveras Reservoir. North of Calaveras Reservoir, the fault is characterized by a relatively low slip rate of 5-6 mm/yr and sparse seismicity (Bryant, 2005). South of Calaveras Reservoir, the fault zone is characterized by a higher rate of surface fault creep that has been evidenced in historic times. The Calaveras Fault has been the source of several moderate magnitude earthquakes and the probability of a large earthquake (greater than M6.7) is much lower than on the San Andreas or Hayward Faults. The USGS Working Group on California Earthquake Probabilities (2008) identifies the Calaveras Fault as having a 7 percent chance of generating one or more earthquakes of Mw 6.7 or greater in the next 30 years.

Concord-Green Valley Fault

The Concord-Green Valley Fault, located 30.3 miles northeast of the proposed Project site, extends from Walnut Creek north to Wooden Valley (east of Napa Valley). Historical record indicates that no large earthquakes have occurred on the Concord or Green Valley Faults (Bryant, 2005). However, a moderate earthquake of Mw 5.4 occurred on the Concord Fault segment in 1955. The Concord and Green Valley Faults exhibit active fault creep and are considered to have a small probability of causing a significant earthquake. The USGS Working Group on California Earthquake Probabilities (2008) identifies the Concord-Green Valley Fault as having a 3 percent chance of generating one or more earthquakes of Mw 6.7 or greater in the next 30 years.

The San Gregorio Fault

The San Gregorio Fault, located 14.2 miles south of the proposed Project site, is an active, structurally complex fault zone as much as 5 km wide. The fault zone is mainly located offshore, west of San Francisco Bay and Monterey Bay, with onshore locations at promontories, such as Moss Beach, Pillar Point, Pescadero Point, and Point Año Nuevo. While there is no record of historic seismicity, the most recent earthquake along the San Gregorio Fault Zone is thought to have occurred after 1270 A.D. to 1400 A.D., but prior to the arrival of Spanish missionaries in 1775 A.D. (Bryant, 2005). The USGS Working Group on California Earthquake Probabilities (2008) identifies the San Gregorio Fault as having a 6 percent chance of generating one or more earthquakes of Mw 6.7 or greater in the next 30 years.

Fault Rupture

Surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. Surface ruptures associated with the 1906 San Francisco earthquake extended for more than 260 miles, with displacements of up to 21 feet. However, not all earthquakes result in surface rupture. For instance, the Loma Prieta earthquake of 1989 caused major damage in the San Francisco Bay Area, but the fault movement did not break through to the ground surface.

Fault rupture almost always follows preexisting faults, which are zones of weakness. Rupture may occur suddenly during an earthquake or slowly in the form of a fault creep. Sudden displacements are more damaging to structures because they can suddenly displace structures and are accompanied by shaking. Fault creep is the slow rupture of the earth's crust. In developed areas, fault creep can offset and deform curbs, streets, buildings, and other structures that lie on the fault trace. Fault rupture is unlikely to occur at the proposed Project site due to the distance from known active faults.

Groundshaking

According to the Association of Bay Area Governments (ABAG) Shaking Intensity Maps and Information, the proposed Project site is located in an area subject to "violent" groundshaking (Modified Mercalli Intensity[3] IX) from earthquakes along the entire San Andreas Fault (similar to the 1906 earthquake), "very strong" ground shaking along the Northern San Gregorio Fault, and "strong" ground shaking (Modified Mercalli Intensity VII) throughout the northern and southern segments of the Hayward Fault (ABAG, 2009). The proposed Project site is also subject to "moderate" ground shaking along the northern and central portions of the Calaveras Fault.

The intensity of earthquake-induced ground motions and the potential forces affecting structures within the proposed Project area can be described using peak ground accelerations, which are represented as a fraction of the acceleration of gravity (g).[4] The CGS estimates the peak ground accelerations for the 10 percent probability of exceedance in 50 years (475-year return period) at approximately 0.67 g (CGS, 2009). However, these estimates of peak ground accelerations are used primarily for formulating building codes and for designing buildings, and are not intended for site-specific hazard analysis. Therefore, it would be necessary to conduct a site-specific evaluation to estimate peak ground accelerations at a level suitable for proposed Project design.

Liquefaction

Liquefaction is a phenomenon in which a soil located below the groundwater surface loses a substantial amount of strength due to strong earthquake ground shaking. Recently deposited (geologically young) and relatively loose natural soils and uncompacted or poorly compacted fills, are potentially susceptible to liquefaction. Dense natural soils and well-compacted fills

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3 A scale composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction. Each scale is designated by Roman numerals.

4 Acceleration of gravity (g) = 980 centimeters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

have low susceptibility to liquefaction while clayey soils and bedrock generally are not subject to liquefaction.

Consequences of liquefaction include vertical settlement, lateral displacement, loss of load bearing capacity for foundations, increased lateral loading on structures, and flotation of lightweight structures embedded in soil that liquefies. As a result of the 1957 Daly City earthquake (mentioned earlier), about 4 to 6 inches of settlement severed a 12-inch pipe from the Lake Merced pump station which is located south of the proposed underground storage tank near Lake Merced (Youd and Hoose, 1978).

The CGS has mapped seismic hazards throughout portions of the proposed Project area that are susceptible to liquefaction. Areas susceptible of liquefaction align with the same areas overlain by fill. According to a geotechnical evaluation prepared by Fugro West, Inc. (2008), the underground storage tank site is underlain by dark gray gravel and clayey soils. These soils are relatively dense and the groundwater levels are relatively deep in this area. Therefore, the potential for liquefaction in this area is considered low. However, at some locations along the proposed pipeline alignment, the Colma Formation is mapped as being overlain by fill (refer to Figure 3.11-1). As mentioned earlier, these fill areas are associated with former channels that drain into Lake Merced. These channel fills are relatively deep, extending to greater than the maximum depth measured (24.5 feet) at some locations and have a higher potential for liquefaction. These areas overlain by fill include the following:

- A pair of former channels with a combined width of about 400 feet that cross Lake Merced Boulevard just south of Higuera Boulevard. These channels merge just before terminating into Lake Merced;
- An approximately 200-foot wide former channel that crosses Lake Merced Boulevard just south of Brotherhood Way;
- A fill area at the intersection of Lake Merced Boulevard and the entrance to the San Francisco Golf Club. This roadway entrance is referred to as North Lake Merced Hills
- An approximately 500-foot wide former channel that crosses Lake Merced Boulevard just north of John Muir Drive.

3.11.2 Regulatory Framework

Federal

There are no federal regulations related to geology and soil resources.

State

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by

earthquakes. The act directs the Department of Conservation to identify and map areas prone to the earthquake hazards of liquefaction, earthquake-induced landslides, and amplified groundshaking. For structures intended for human occupancy, the act requires site-specific geotechnical investigations to identify potential seismic hazards and formulate mitigation measures prior to permitting most developments designed for human occupancy within the Zones of Required Investigation. As mentioned above, the CGS has mapped seismic hazards throughout portions of the proposed Project area that are susceptible to liquefaction. However, the proposed Project would not involve the construction of any structures for human occupancy; thus, this act does not apply to this proposed Project.

Building Codes

The California Building Code (CBC), which is codified in CCR Title 24, Part 2, was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, egress facilities, and general building stability. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all building and structures within its jurisdiction. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable.

The CBC is based on the International Building Code (IBC). The 2007 CBC is based on the 2006 IBC published by the International Code Conference. In addition, the CBC contains necessary California amendments that are based on the American Society of Civil Engineers (ASCE) Minimum Design Standards 7-05. ASCE 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion in building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, all of which are used to determine a Seismic Design Category (SDC) for a proposed Project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E/F (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC.

Local

SFPUC General Seismic Design Requirements

The SFPUC's *General Seismic Design Requirements* (SFPUC, 2006) set forth consistent criteria for the seismic design and retrofit of all facilities and components of the regional water system. In accordance with these design requirements, every project must have project-specific design criteria based on the seismic environment and importance of the facility in achieving water

service delivery goals in the event of a major earthquake.[5] The design criteria are generally based on the referenced codes, standards, and industry publications; however, in some cases, design criteria would exceed these requirements for facilities such as the proposed Project that are located in a severe seismic environment and are needed to achieve water service delivery goals.

Under these design requirements, each facility is evaluated for its necessity in meeting the water service delivery goals and assigned a seismic performance class for the purpose of determining appropriate seismic design criteria. Facilities needed to achieve a basic level of service within 24 hours of a major earthquake are assigned a seismic performance class of Critical. This class includes structures and components of the storage, distribution, treatment, and control system, either with redundancy or without redundancy, that have common-cause failure modes (such as the same fault crossing) and for which the failure would result in an unacceptable service level. Facilities that may experience damage but should be capable of restoration to service within 30 days are assigned a seismic performance class of Important. This class includes structures and components of the storage, distribution, treatment, and control systems that have some level of redundancy or for which failure would not result in an unacceptable service level.

San Francisco

The Environmental Protection Plan Element City of San Francisco's General Plan (City and County of San Francisco [CCSF], 2004) addresses the impact of urbanization including the use of oil and gas resources and hazardous waste on the natural environment. The Environmental Plan Element contains two policies that relate to geology and soils. These policies are described below:

> Policy 7.4: Assure correction of landslide and shore erosion conditions where it is in the public interest to do so.
>
> Policy 7.5: Prohibit construction, as a general rule, on land subject to slide or erosion.

3.11.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this EIR and consistent with Appendix G of the *CEQA Guidelines*, the proposed Project is considered to have a significant impact if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42),

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5 In the *General Seismic Design Requirements*, the term "major earthquake" is defined as an earthquake of Richter magnitude 7.8 or larger on the San Andreas Fault, 7.1 or larger on the Hayward Fault, or 6.8 or larger on the Calaveras Fault.

  - Strong seismic groundshaking,
  - Seismic-related ground failure, including liquefaction,
  - Landslides

- Result in substantial soil erosion or the loss of topsoil
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the proposed Project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Approach to Analysis

The following impact analysis focuses on potential proposed Project impacts related to seismicity and other geologic hazards. This evaluation considers proposed Project plans, current conditions at the proposed Project site, and applicable regulations and guidelines. Based on the proposed construction of the various proposed Project elements and the geologic environment in the proposed Project area, some of the above CEQA criteria are not considered relevant to the proposed Project; and therefore, will not be evaluated further in this EIR. These issues are:

> Rupture of a known earthquake fault: Ground rupture is considered most likely to occur along active faults, which are referenced in Table 3.11-1. As indicated previously, the proposed Project site is *not* within an Alquist-Priolo Fault Rupture Hazard Zone, and no mapped active faults are known to pass through or in the vicinity of the proposed Project area (Bryant, 2005; Peterson, 1996). Therefore, the proposed Project would not expose persons or structures to risk of ground rupture along a fault line.
>
> Inadequate Support for Septic Tanks: As proposed, the Project would not result in the production or disposal of wastewater. Therefore this issue is not applicable to the proposed Project.

Construction Impacts

Impact 3.11-1: Slope instability during and after construction. (Less than Significant with Mitigation)

Natural or constructed slopes could become destabilized during construction-related excavation and/or grading operations. Excavations for the new pipeline, underground storage tank, pump station, and potential work areas could result in slope instability, potentially triggering slope failures that could result in landslides, slumps, soil creep, or debris flows. Slope failures are more likely to occur in areas with a history of previous failure and in weak geologic units exposed on unfavorable slopes, such as areas mapped by the USGS (1997) as "few landslides," "many landslides," or "mostly landslide." Such slope failures could damage the proposed Project

facilities or other nearby facilities and properties. The proposed Project area lies in a primarily "flatland" area, with slightly sloping terrain in the southern portion of the proposed Project site. Some areas along the proposed pipeline alignment would occur on artificial fills which have undergone landslides in the past. Since landslides have occurred within the near proposed Project vicinity, impacts related to construction-triggered landslides are considered potentially significant. Incorporation of slope stability measures (Mitigation Measure 3.11-1) identified in Fugro West's geotechnical report (2008) would reduce this impact to a less-than-significant level. Recommendations included in this report relate to temporary construction slopes and temporary shoring activities necessary for pipeline and underground storage tank construction.

Subsequent to construction, slope instability (including landslides, earth flows, and debris flows) would unlikely displace or destroy proposed facilities since these components would be constructed underground with the exception of the proposed irrigation pump station. Furthermore, proposed structures would be designed and constructed to withstand or avoid seismically induced landslides in accordance with the *General Seismic Design Requirements.* Therefore, no impacts related to seismically induced landslides or other slope failures would be expected.

Mitigation Measures

Measure 3.11-1: The engineer will incorporate recommendations identified in the site-specific geotechnical report (Fugro West, 2008) regarding slope and excavation stabilization measures, including shoring methods and techniques, into construction documents.

Impact Significance after Mitigation: Less than Significant.

Impact 3.11-2: Erosion during construction. (Less than Significant with Mitigation)

Construction activities such as backfilling, grading, and compaction can remove stabilizing vegetation and expose areas of loose soil that, if not properly stabilized during construction, can be subject to soil loss and erosion by wind and stormwater runoff. Although erosion can be a common construction-related occurrence, especially during wintertime construction projects, implementation of standard erosion control measures and compliance with Article 4.1 of the San Francisco Public Works Code (see Mitigation Measure 3.12-1 in Section 3.12, Hydrology and Water Quality) would ensure this impact is less than significant. San Francisco's regulation requires the contractor to develop and implement an erosion and sediment control plan to reduce the impact of runoff from the construction site. The erosion and sediment control plan would be reviewed and approved by the SFPUC prior to implementation, and the SFPUC would conduct periodic inspections to ensure compliance with the erosion and sediment control plan. Also see Section 3.12, Hydrology and Water Quality, for discussion of water quality impacts associated with erosion hazards and measures to protect downstream water quality.

Mitigation Measures

See Mitigation Measure 3.12-1 in Section 3.12, Hydrology and Water Quality.

Impact Significance after Mitigation: Less than Significant.

Operational Impacts

Impact 3.11-3: Seismically induced groundshaking. (Less than Significant with Mitigation)

Groundshaking is the most widespread effect of earthquakes and overall poses a greater seismic threat than local ground rupture. Depending on the level of groundshaking, distance to the epicenter, and composition of underlying materials an earthquake can damage pipelines, valves, and control facilities, resulting in a disruption of water service and/or endangering the health and welfare of people. Such damage could require short-term, temporary service interruptions for inspections and repairs, and long-term repairs could also be required.

As discussed in Section 3.11.1, groundshaking during an earthquake, measured as peak ground accelerations, in the proposed Project area could be quite strong, around 0.67g which is capable of causing significant damage in poorly engineered facilities. However, the proposed pipeline, underground storage tank, and pump station would be designed to meet current seismic standards in accordance with the SFPUC's *General Seismic Design Requirements* and the California Building Code, thereby improving the ability of the proposed facilities to withstand seismic damage due to groundshaking. In addition, the preliminary geotechnical investigation provides site-specific recommendations regarding seismic design of the underground storage tank with the 2007 California Building Code (CBC) and ASCE 7-05, Minimum Design Loads for Buildings and Other Structures (Fugro West, 2008). Compliance with the *General Seismic Design Requirements* and incorporation of design recommendations included in the geotechnical report (Mitigation Measure 3.11-3) would ensure that impacts related to groundshaking are less than significant.

Mitigation Measures

Measure 3.11-3: The engineer will incorporate seismic design and construction recommendations from Fugro West's geotechnical report (2008) into project design documents to minimize the potential for seismic hazards. Such measures will ensure that the underground storage tank, recycled water pipeline, and irrigation pump station are designed and constructed to resist lateral forces generated by earthquake shaking and seismic ground failure.

Impact Significance after Mitigation: Less than Significant.

Impact 3.11-4: Seismically induced ground failure, including liquefaction and settlement. (Significant)

Liquefaction-related phenomena can include lateral spreading, ground oscillation, loss of bearing strength, subsidence, and buoyancy effects, all of which can damage pipelines and associated facilities. During the loss of bearing capacity, large deformations can occur within the soil mass. Damage from liquefaction and lateral spreading is generally most severe when liquefaction of materials located within 15 to 20 feet of the ground surface.

Seismically induced settlement can occur in areas underlain by compressible sediments. Stream channel deposits and recent valley alluvium are generally the most susceptible to earthquake-induced settlement. Additionally, artificial fills, especially undocumented fills are highly susceptible to mobilization and densification, resulting in earthquake-induced subsidence.

Where pipelines are buried in soil overlying deeper liquefiable soil layers, liquefaction of the deeper layers can result in substantial lateral spreading of the upper competent soil layer. Lateral spreading can extend several hundred feet from a slope, and displacements of tens of feet can occur if soil conditions are especially favorable for liquefaction and if earthquake shaking is of sufficient duration. Lateral spreading was responsible for most of the pipeline failures that occurred in San Francisco during the 1989 Loma Prieta earthquake.

During an earthquake, underground utilities tend to fail at the interface between a softer unit and a stiffer unit due to the settlement that occurs within the softer unit, a phenomenon known as differential settlement. Differential settlement is of concern, as it can cause the uneven movement of pipelines, resulting in substantial damage to pipelines, including cracks and breakage.

As discussed in Section 3.11.1, Setting, the proposed Project area would occur on land with "very low" to "low" liquefaction susceptibility. The areas with "low" liquefaction susceptibility are areas where former channels once drained to Lake Merced are now overlain by artificial fill (see Figure 3.11-1). CGS (2000) has mapped these former channel areas as seismic hazard zones for liquefaction. Results from Fugro West's geotechnical study also confirmed that these former channels and fill areas consist of loose sandy fill deposits along portions of the pipeline alignment. Thus, the potential for seismically induced liquefaction and/or densification or lateral spreading along areas of the proposed pipeline is considered high. However, the proposed recycled water pipeline would be designed to meet current seismic standards in accordance with the *General Seismic Design Requirements*, thereby improving the ability of the pipeline to withstand seismic damage due to liquefaction and related phenomena. Furthermore, incorporation of seismic design recommendations contained within the geotechnical report would ensure this impact is minimal (Mitigation Measure 3.11-3). Thus, compliance with the *General Seismic Design Requirements* and implementation of Mitigation Measure 3.11-3 would ensure that impacts related to seismically induced ground failures would be less than significant.

Mitigation Measures

See Mitigation Measure 3.11-3 above.

Impact Significance after Mitigation: Less than Significant.

Impact 3.11-5: Project located on expansive or corrosive soils. (Significant)

Expansive Soils

Expansive soils are characterized by their ability to undergo significant volume change (i.e., to shrink and swell) due to variations in soil moisture content. Changes in soil moisture can result from rainfall, landscape irrigation, utility leakage, roof drainage, and/or perched groundwater. These soils are typically very fine-grained and contain a high percentage of clay. Expansion and contraction of expansive soils in response to changes in moisture content can lead to differential and cyclical movements that can in turn cause damage and/or stress to structures and equipment. As described in Section 3.11.1, Setting, the proposed Project would be located on soils with a low shrink-swell potential. Under the CBC, the expansive characteristics of a soil would be determined according to the Uniform Building Code Standard 18-2, and the soils classified according to CBC Table 18A-1-B. To minimize impacts associated with expansive soils, the preliminary geotechnical report contains recommendations regarding the use of "non-expansive" fill and compaction levels at the proposed Project sites. Incorporation of recommendations related to the use of "non-expansive" engineered fill contained in the geotechnical report (Mitigation Measure 3.11-5) would ensure that potential impacts associated with expansive soils is less than significant.

Corrosive Soils

The corrosivity of soils is commonly related to several key parameters including soil resistivity, the presence of chlorides and sulfates, oxygen content, and pH. Typically, the most corrosive soils are those with the lowest pH and highest concentration of chlorides and sulfates. Wet/dry conditions can result in a concentration of chlorides and sulfates as well as movement in the soil that tends to break down protective corrosion films and coatings on the surface of building materials. High-sulfate soils are also corrosive to concrete and may prevent complete curing, reducing its strength considerably. Low pH and/or low-resistivity soils can corrode buried or partially buried metal structures. Depending on the degree of corrosivity of the subsurface soils, building materials such as concrete, reinforcing steel in concrete structures, and bare-metal structures exposed to these soils can deteriorate, eventually leading to structural failures.

As mentioned in Section 3.11.1, the preliminary geotechnical investigation concluded that the corrosion potential of the proposed Project area's soils is "moderately corrosive." The corrosivity analysis indicated low chloride ion concentrations and low sulfate ion concentrations. These concentrations are considered insufficient to damage reinforced concrete structures and cement mortar-coated steel at these locations. However, one boring test with a pH of 5.9 indicated that the soil could be considered corrosive to buried iron or steel. Since soil with a pH of less than 6.0 is typically considered to be corrosive to buried iron, steel, and mortar-coated steel, soils within the proposed Project area could potentially be corrosive. The proposed pipe would be made of ductile

iron, a material which is considered to be properly protected against corrosion. Furthermore, impacts associated with corrosion would be reduced by implementing recommendations from the preliminary geotechnical report (Mitigation Measure 3.11-5). Corrosion control measures would include retaining a corrosion engineer to evaluate the corrosion potential of the soil environment on buried facilities. Thus, implementation of Measure 3.11-5 would ensure that impacts related to expansive or corrosive soils are less than significant.

Mitigation Measures

Measure 3.11-5: The engineer will incorporate expansive soil and corrosion recommendations from Fugro West's geotechnical report (2008) into Project design documents.

Impact Significance after Mitigation: Less than Significant.

3.11.4 References – Geology and Soils

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Youd, T.L. and Hoose, S.N., 1978, "Historic Ground Failures in Northern California Triggered by Earthquakes," USGS Professional Paper 993, available online at: http://pubs.usgs.gov/pp/1978/pp0993/pp993_text.pdf, accessed on April 2009.

3.12 Hydrology and Water Quality

This section describes existing hydrologic and water quality conditions in the proposed Project vicinity and presents applicable regulations that pertain to surface water hydrology, groundwater, flooding, and water quality. This section discusses the potential effects on surface water hydrology and water quality that could result from construction and operation of the proposed Project and identifies appropriate mitigation measures to reduce or minimize potentially significant impacts.

3.12.1 Setting

Surface Hydrology

The proposed Project lies within the San Francisco Bay hydrologic region. The San Francisco Bay hydrologic region extends from southern Santa Clara County north to Tomales Bay in Marin County, and inland to the confluence of the Sacramento and San Joaquin Rivers. Rivers and streams in the region flow to San Francisco Bay or directly to the Pacific Ocean. Along the Peninsula and the San Francisco region, watershed boundaries are formed by natural topographic divides or engineered structures that have altered natural drainage patterns, including engineered channels or major roadways. Located in a developed area, the proposed Project area crosses portions of two watersheds; the Lake Merced watershed to the north in the City and County of San Francisco (San Francisco) and the Vista Grande watershed to the south in the City of Daly City (Daly City).

Lake Merced Watershed

The majority of the proposed Project area lies along the eastern border of the Lake Merced watershed. The Lake Merced watershed covers approximately 650 acres, 300 acres of which consists of the lake, and is bounded by the adjacent roadways including Lake Merced Boulevard, Skyline Boulevard, and John Muir Drive. Lake Merced, located west of the proposed Project area, comprises four lake bodies (North Lake, East Lake, South Lake, and Impound Lake) that are fed by rainwater and seepage from historic springs and creeks. Historically, some streams in San Francisco flowed towards the Lake Merced area and into the ocean (SFPUC, 2009b).

Within this watershed, the proposed Project elevations vary from approximately 103 feet above mean sea level (amsl) at the proposed underground storage tank site (existing Harding Park maintenance yard) to approximately 33 feet amsl at the John Muir Drive and Lake Merced Boulevard intersection, and then gently slopes up to 44 feet amsl at the southern terminus of the pipeline alignment (Fugro West, 2009). Site grades along the proposed pipeline alignment generally slope gently downward from the proposed underground storage tank site to the southern terminus of the proposed pipeline. A few storm drains are located along the western side of Lake Merced Boulevard.

Vista Grande Watershed

The southernmost portion of the proposed Project area (i.e., at the John Muir Drive and Lake Merced Boulevard intersection) lies within the Vista Grande watershed which encompasses approximately 2.5 square miles of northwestern Daly City. The Vista Grande watershed is bounded by San Francisco to the north, Colma Creek to the east and south, and the Pacific Ocean to the west. Stormwater flows from this watershed are collected by three main culverts: a 24-inch-diameter culvert, a 60-inch-diameter culvert, and a 7-foot by 6-foot box culvert. These three culverts discharge into the Vista Grande Canal, which starts near the intersection of Lake Merced Boulevard and John Muir Drive. The 7-foot by 6-foot culvert crosses underneath the southern portion of the proposed alignment. Flows in the Vista Grande Canal continue west along John Muir Drive where they are diverted into the existing Vista Grande outfall tunnel. The tunnel discharges into the Pacific Ocean through an existing outfall structure at Fort Funston, located in Golden Gate National Recreation Area lands (RMC, 2006). As mentioned above, the topography from the Lake Merced Boulevard and John Muir Drive intersection gently slopes upward to about an elevation of 44 feet amsl at the southern terminus of the pipeline alignment.

Surface Water Quality

Beneficial Uses

The beneficial uses of the surface water bodies in the proposed Project area have been designated by the San Francisco Bay Regional Water Quality Control Board (RWQCB) in the *Water Quality Control Plan for the San Francisco Bay Region* (Basin Plan). The beneficial uses provide the basis for determining appropriate water quality objectives tnat are needed to maintain the beneficial uses of these water bodies and are discussed further in Section 3.12.3, Regulatory Framework. The beneficial uses for water bodies within or near the proposed Project area are shown in **Table 3.12-1**.

TABLE 3.12-1
DESIGNATED BENEFICIAL USES OF WATER BODIES IN THE PROPOSED PROJECT AREA

Water Body	Designated Beneficial Uses[a]
San Francisco Region	
Lake Merced	COLD, MUN (potential), REC-1, REC-2, SPWN, WARM, WILD
Groundwater Basins	
Westside A	MUN, PROC (potential), IND (potential), AGR
Westside B	MUN (potential), PROC (potential), IND (potential), AGR

[a] Beneficial Uses Key:
MUN (Municipal and Domestic Supply); AGR (Agriculture); REC-1 (Body Contact Recreation); REC-2 (Noncontact Recreation); WARM (Warm Freshwater Habitat); COLD (Cold Freshwater Habitat); MIGR (Fish Migration); SPWN (Fish Spawning); WILD (Wildlife Habitat); NAV (Navigation); RARE (Preservation of Rare and Endangered Species); SHELL (Shellfish Harvesting); COMM (Ocean, Commercial, and Sport Fishing); EST (Estuarine Habitat); IND (Industrial Service Supply); PROC (Industrial process water supply).

SOURCE: RWQCB, 2007.

Water Quality at North San Mateo County Sanitation District Recycled Water Treatment Plant

As previously stated in Chapter 2, Project Description, the North San Mateo County Sanitation District (District) recycled water treatment plant is permitted by the State of California Department of Public Health (CDPH) and the San Francisco RWQCB to produce tertiary-level recycled water appropriated for unrestricted use as defined by Title 22 of the California Code of Regulations. Recycled water facilities at this treatment plant are authorized by Daly City's NPDES permit to produce up to 2.77 million gallons per day (mgd). Throughout the year, the District monitors water quality to maintain compliance with Title 22 for unrestricted use. Monitoring is performed for the following: flow rate; total coliform; contact time; turbidity; dissolved oxygen; dissolved sulfides; and applicable standard observations. The District additionally monitors: pH; electrical conductivity; total dissolved solids; boron; chloride; sodium; sodium adsorption ratio; adjusted sodium adsorption ratio and biocarbonate.

Groundwater Hydrology

Westside Groundwater Basin

The proposed pipeline would traverse across both the northern and southern portions of the Westside Groundwater Basin. The Westside Groundwater Basin encompasses an area of about 45 square miles and underlies the cities of Daly City, Colma, South San Francisco, San Bruno, Millbrae, and parts of San Francisco, Burlingame, and Hillsborough. The Westside Groundwater Basin comprises the unconsolidated sediments of the Colma and Merced Formations, as well as dune sands (DWR, 2006). Groundwater in the basin has potable and nonpotable uses by the San Francisco Public Utilities Commission (SFPUC), Daly City, California Water Service Company (Cal Water), and the City of San Bruno. These four entities work cooperatively to manage and monitor the basin (SF Planning Department, 2007).

Groundwater quality in the Westside Groundwater Basin generally meets primary and secondary drinking water standards with the exception of nitrate and manganese which are of concern at select wells (Luhdorff and Scalmanini, 2006). In the North Westside Groundwater Basin, nitrate concentrations in the primary production aquifer have exceeded the maximum contaminant level (MCL) of 45 milligrams per liter (mg/L). In the South Westside Groundwater Basin, nitrate has also exceeded this standard in the South San Francisco and Daly City areas. Manganese concentrations have exceeded the secondary MCL of 0.05 mg/L in monitoring wells near the Central and North Lake Merced Pump Station (Luhdorff and Scalmanini, 2006).

Aquifer System

Within the northern portion of the proposed Project area, the groundwater basin is characterized by relatively shallow depths of groundwater ranging between 5 to 60 feet. The basin comprises three aquifers within this particular region. The shallow, unconfined aquifer within the vicinity of Lake Merced extends from the water table to the top of the "-100 foot clay" – a clay layer at approximately 100 feet below sea level that separates the shallow aquifer from the underlying primary production aquifer in the northern portion of the proposed Project area. A few monitoring

wells are located near the Harding Park maintenance yard and two are located along the southern part of Lake Merced. In addition, a few municipal wells are located approximately one mile south and southeast of the proposed Project area.

The southern portion of the proposed Project area overlays the northern portion of the Westside Groundwater Basin, which occurs within the northern portion of the South Westside Groundwater Basin.[1] Groundwater within this part of the basin can reach depths of up to 300 feet or more. Within this portion of the Westside Groundwater Basin, the -100-foot clay is absent and the aquifer system is composed of the primary production aquifer and deep aquifer. This portion of the groundwater basin has been a source of water supply to Daly City, South San Francisco (through Cal Water), and San Bruno for about 50 years. The groundwater within this region has historically been used for municipal uses and irrigation purposes at golf courses and cemeteries in the vicinity of Lake Merced (the Olympic Club, San Francisco Golf Club, and the Lake Merced Golf Club). Within the proposed Project vicinity there is one monitoring well located within one-quarter mile east of the proposed Project area.

Flooding

Flooding is typically caused by intense storm events. San Francisco is not presently mapped by the Federal Emergency Management Agency (FEMA); however the proposed Project area is not likely to occur within a 100-year floodplain or flood hazard area. Other flood-related hazards include tsunamis and seiches. Tsunamis are ocean waves caused by an underwater earthquake, landslide, or volcanic eruption. No tsunamis have been known to strike San Mateo or San Francisco counties; the portions that are most vulnerable to tsunamis are along the Pacific Coast. According to the Association of Bay Area Government's (ABAG) Tsunami Evacuation Planning Map, the proposed Project would lie in a tsunami evacuation area (ABAG, 2009). A seiche is a rhythmic motion of water in a partially or completely landlocked water body caused by landslides, earthquake-induced ground accelerations, or ground offset. Due to the Lake Merced's close proximity to the Pacific Ocean and as an enclosed water body, Lake Merced could experience a seiche.

Localized flooding does occur during periods of intense precipitation, especially in low-lying areas where storm drains become clogged with debris. During several storm events, flooding has occurred at the Vista Grande Canal, which separates the Olympic Club and Lake Merced along John Muir Drive and has subsequently caused erosion along the adjacent bank of Lake Merced (RMC, 2006). Flooding can also occur as a result of dam or levee failure. However, since there are no dams or levees within the proposed Project area, this type of flooding is not an issue.

[1] The boundary between the North Westside Groundwater Basin and South Westside Groundwater Basin is the same jurisdictional boundary that separates San Francisco and San Mateo counties.

3.12.2 Regulatory Framework

Federal

Clean Water Act

The federal Clean Water Act, enacted by Congress in 1972 is the primary federal law regulating water quality in the U.S. Its objective is to reduce or eliminate water pollution in the nation's rivers, streams, lakes, and coastal waters. The Clean Water Act authorizes the U.S. Environmental Protection Agency (USEPA) the authority to implement federal pollution control programs such as setting water quality standards for contaminants in surface water, establishing wastewater and effluent discharge limits from various industry categories, and imposing requirements for controlling nonpoint-source pollution. At the state and regional levels, the act is administered and enforced by the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs).

Total Maximum Daily Load

In accordance with Section 303(d) of the Clean Water Act, state governments must present the USEPA with a list of "impaired water bodies," defined as those water bodies that do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology.

Placing a water body on the Section 303(d) List of Impaired Water Bodies triggers the development of a Total Maximum Daily Load (TMDL) pollution control plan for that water body and associated pollutant/stressor on the list. The TMDL is the quantity of a pollutant that can be safely assimilated by a water body without violating water quality standards. The TMDL serves as the means to attain and maintain water quality standards for the impaired water body to support designated and potential beneficial uses identified in the Basin Plan. During each Section 303(d) listing cycle, the water bodies on the list are prioritized, and a schedule is established for completing the TMDLs. Listed impaired water bodies in the vicinity of the proposed pipeline alignment are presented in **Table 3.12-2**.

TABLE 3.12-2
SECTION 303(d) LIST OF IMPAIRED WATER BODIES IN THE PROJECT AREA

Water Body	Pollutant	Potential Source
San Francisco Region		
Lake Merced	Low dissolved oxygen	Unknown

SOURCE: SWRCB, 2007; EPA, 2008

State

Porter-Cologne Water Quality Control Act

The Porter Cologne Water Quality Control Act is the primary statute that regulates water quality in California. The nine RWQCBs regulate water quality under the Porter-Cologne Water Quality Control Act through the regulatory standards and objectives set forth in Water Quality Control Plans (also referred to as Basin Plans) prepared for each region.

Water Quality Control Plan (Basin Plan)

Each RWQCB is required to develop, adopt, and implement a Water Quality Control Plan (Basin Plan) for its respective region. The *Water Quality Control Plan for the San Francisco Bay Region* (Basin Plan), prepared by the San Francisco Bay RWQCB, identifies the beneficial uses of surface waters within its region and specifies water quality objectives to maintain the continued beneficial uses of these waters. The RWQCB is responsible for protection of the beneficial uses of the San Francisco Bay Area water resources, including water bodies in the Peninsula and San Francisco Regions. Table 3.12-1 lists the assigned beneficial uses for the water bodies in the proposed Project area. The beneficial uses of surface water bodies generally apply to all its tributaries.

State Recycled Water Policy

The SWRCB approved a Recycled Water Policy in February 2009. California Water Code section 13140 authorizes the SWRCB to adopt state policy for water quality control. The purpose of the Policy is to focus on increasing the use of recycled water from municipal wastewater sources that meets the definition in Water Code Section 13050(n), in a manner that implements state and federal water quality laws. The SWRCB expects to develop additional policies to encourage the use of stormwater, encourage water conservation, encourage the conjunctive use of surface and groundwater, and improve the use of local water supplies. When used in compliance with this Policy, Title 22 and all applicable state and federal water quality laws, the SWRCB finds that recycled water is safe for approved uses, and strongly supports recycled water as a safe alternative to potable water for such approved uses.

The Policy declares the SWRCB's mission to "preserve, enhance and restore the quality of California's water resources to the benefit of present and future generations." To achieve that mission, the SWRCB supports and encourage every region in California to develop a salt/nutrient management plan by 2014 that is sustainable on a long-term basis and that provides California with clean, abundant water. These plans shall be consistent with the Department of Water Resources' (DWR) Bulletin 160, as appropriate, and shall be locally developed, locally controlled and recognize the variability of California's water supplies and the diversity of its waterways. The SWRCB strongly encourages local and regional water agencies to move toward clean, abundant, local water for California by emphasizing appropriate water recycling, water conservation, and maintenance of supply infrastructure and the use of stormwater (including dry-weather urban runoff) in these plans (SWRCB, 2009b).

The purpose of the Policy is to provide direction to the Regional Water Quality Control Boards (RWQCBs), proponents of recycled water projects, and the public regarding the appropriate criteria to be used by the SWRCB and the RWQCBs in issuing permits for recycled water projects (SWRCB, 2009). The Policy describes the benefits of recycled water use, mandate for the use of recycled water, roles of the SWRCB, RWQCB, CDPH and DWR and includes plans and requirements that would be a part of streamlined permitting for landscape irrigation projects. This policy provides specific guidance for landscape irrigation projects related to control of incidental runoff.[2] Aspects of the recycled water policy that relate to incidental runoff include the following practices:

- Implementation of an operations and management plan that may apply to multiple sites and provides for detection of leaks, and correction either within 72 hours of learning of the runoff, or prior to the release of 1,000 gallons,
- Proper design and aim of sprinkler heads,
- Refraining from application during precipitation events, and

Management of any ponds containing recycled water such that no discharge occurs unless the discharge is a result of a 25-year, 24-hour storm event or greater, and there is notification of the appropriate regional Water Board Executive Officer of the discharge (SWRCB, 2009b).

According to the Policy, regulatory requirements for recycled water including emerging contaminants shall be based on the best available peer-reviewed science. SWRCB, in consultation with CDPH, plans to convene a "blue-ribbon" advisory panel to guide future actions relating to constituents of emerging concern (SWRCB, 2009b).

General Waste Discharge Regulations for Landscape Irrigation Uses of Recycled Water

Consistent with the recently approved Recycled Water Policy, the SWRCB has approved (as of July 2009) a general permit that includes requirements to manage recycled water for landscape irrigation uses in a manner that is protective of public health. This general permit is intended to satisfy the requirements of California Water Code Section 13552.5 and is limited to disinfected tertiary recycled water produced by a municipal wastewater treatment plant as defined in Water Code section 13625(b)(1) and section 13625(b)(2). Under this permit, landscapes irrigated with recycled water is considered a viable option to reduce potable water demand for projects including parks, school yards, athletic fields, golf courses, cemeteries, and residential landscaping (SWRCB, 2009c). As described in Chapter 2, Project Description, Daly City is currently permitted to produce a maximum recycled water flow for unrestricted use of 2.77 million gallons per day. Daly City may be subject to additional waste discharge requirements under this permit.

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2 Incidental runoff is defined as unintended small amounts of runoff from recycled water use areas, such as unintended, minimal over-spray from sprinklers that escapes the recycled water use area (SWRCB, 2009b).

Waste Discharge Regulations

Section 402 of the Clean Water Act establishes a framework (the National Pollutant Discharge Elimination System [NPDES] program) to protect water quality by regulating industrial, municipal, and construction-related sources of pollutant discharges to waters of the U.S. In California, the NPDES program is administered by the SWRCB through the RWQCBs and requires that municipalities obtain permits which outline programs and activities to control water pollution. The water quality-related permits that the proposed Project could be subject to are described below.

Municipal Stormwater Permit

The NPDES Municipal Stormwater Permitting Program regulates stormwater discharges from separate storm sewer systems. The NPDES Municipal Stormwater Permits require the discharger to develop and implement a Stormwater Management Plan/Program with the goal of reducing the discharge of pollutants to the maximum extent practicable.

San Mateo County and the 20 incorporated cities and towns in the county (including Daly City) are covered under the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP). The City and County of San Francisco holds a municipal permit that covers discharges from its combined stormwater and sanitary sewer system. The SMCWPPP is described below under Local Regulations.

General Construction Permit

The federal Clean Water Act prohibits discharges of stormwater from construction projects unless the discharge is in compliance with a NPDES permit. The SWRCB is the permitting authority in California and has adopted a Statewide General Permit for Stormwater Discharges Associated with Construction Activity (General Construction Permit) for projects that disturb one or more acres of soil. The NPDES General Construction Permit requirements apply to clearing, grading, and earthwork activities that result in a total disturbance of one or more acres of soil.

In accordance with the NPDES permitting requirements for construction activities, the contractor will be required to submit a notice of intent and develop and implement a storm water pollution prevention plan (SWPPP). The SWPPP must include a site map(s) showing the perimeter of construction sites, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both prior to and following construction, and drainage patterns at each site. The SWPPP must also specify Best Management Practices (BMPs) that would be used to protect stormwater runoff as well as the placement of those BMPs; a monitoring program for non-visible pollutants to be implemented if there is a failure of BMPs. Examples of BMPs that are typically used at sites lying at higher elevations include installation of silt fences or sand bags at construction sites to prevent stormwater runoff at lower elevations. Measures for erosion and sediment control, construction waste handling and disposal, and post-construction erosion and sediment control must also be incorporated, along with methods to eliminate or reduce non-stormwater discharges to receiving waters.

SWRCB is in the process of reissuing the General Construction Permit and released a revised draft of the new permit on April 23, 2009. A preliminary draft was prepared in 2007; however due to the significant amount of comments received on the preliminary draft, the draft permit requirements were revised again (SWRCB, 2009a). When adopted, this permit will replace the existing General Construction Permit, and, as proposed, would require the permittee (in this case, SFPUC and Daly City) to implement additional minimum BMPs as well as specific analytical procedures to determine whether the BMPs implemented on a construction site are (1) preventing further impairment due to sediment in stormwater discharged directly into waters listed as impaired for sediment or silt, and (2) preventing non-visible pollutants in stormwater discharges from construction sites from causing or contributing to exceedances of water quality objectives. In addition, all sites would be required to meet new development and redevelopment performance standards to minimize or mitigate hydromodification[3] impacts. As proposed, the permit allows for a risk-based permitting approach and specifies water quality action levels, numeric effluent levels, and detailed management practices.

Construction Dewatering Permit

Construction activities such as excavation and trenching in areas with shallow groundwater would require dewatering, which would be subject to the RWQCB construction dewatering permit requirements. Dewatering operations are regulated under state requirements for stormwater pollution prevention and control. Although it is anticipated that the proposed Project would not require dewatering, there could be areas on Lake Merced Boulevard with shallow water tables. Discharge of non-stormwater from a trench or excavation that contains sediments or other pollutants to sanitary sewer, storm drain systems, creek bed (even if dry), or receiving waters is prohibited. Discharge of uncontaminated groundwater from dewatering is a conditionally exempted discharge by the RWQCB. However, the removed water could potentially be contaminated with chemicals released from construction equipment or sediments from excavation. Therefore, disposal of dewatering discharge would require permits either from the RWQCB for discharge to surface creeks and groundwater or from local agencies for discharge to storm or sanitary sewers. The RWQCB lists non-stormwater discharge controls specifically for dewatering operations. The control measures are described in Section 3.12.3, Impacts and Mitigation Measures. Discharge of water resulting from dewatering operations would require an NPDES Permit, or a waiver (exemption) from the RWQCB, which would establish discharge limitations for specific chemicals (if they occur in the dewatering flows). Since the contractor may discharge groundwater into sanitary sewers for this Project, a discharge permit would be obtained from the SFPUC Wastewater Enterprise which is described in more detail below under Local Regulations.

3 Alteration of the hydrologic characteristics of coastal and noncoastal waters, which in turn could cause degradation of water resources. In the case of a stream channel this is the process whereby a stream bank is eroded by flowing water. This typically results in the suspension of sediments in the water course (USEPA, 2009).

Waste Discharge Requirements for the North San Mateo County Sanitation District Recycled Water Treatment Plant

As mentioned earlier, the North San Mateo County Sanitation District recycled water treatment plant is currently subject to the RWQCB waste discharge requirements. In order to operate the proposed recycled water pipeline and to supply recycled water to Harding Park Golf Course, these waste discharge requirements would require an amendment to Daly City's existing recycled water permit. Operational requirements would include compliance with Title 22 requirements (described below). Additional irrigation methods that would prevent incidental runoff to surface water bodies may be required as described in the State Recycled Water Policy.

Title 22 Requirements

The California Department of Public Health (CDPH) is responsible for regulating the use of recycled water in California. Title 22, Chapter 3 of the California Code of Regulations sets water quality standards and treatment reliability criteria for recycled water. With recycled water, a key concern is the potential risk of human exposure to pathogenic organisms; therefore the recycled water is required to comply with water quality standards set under Title 22. Title 22 establishes regulatory requirements for recycled water use to protect the beneficial uses of recycled water for land applications, such as irrigation of fields, golf course, or public access lands (CDPH, 2009). Operational requirements include proper indication of recycled water pipelines with purple pipe and fixtures and cross-connection controls. The recycled water proposed to be supplied under this proposed Project would comply with Title 22 standards.

Local

San Mateo Countywide Water Pollution Prevention Program

The San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), previously named the San Mateo Countywide Stormwater Pollution Prevention Program (STOPPP), was formed in 1993 to coordinate countywide efforts to prevent stormwater pollution and facilitate compliance with NPDES municipal discharge requirements. Each of its 21 member agencies (20 cities and the county) share a common NPDES Municipal Stormwater Permit and are responsible for implementing local stormwater pollution prevention and control activities for their local storm drain systems. The permit contains a comprehensive plan to reduce the discharge of pollutants to the "maximum extent practicable" and mandates that participating municipalities implement an approved stormwater management plan. The SMCWPPP Stormwater Management Plan is organized around five major stormwater pollution prevention and control components: municipal maintenance; industrial and illicit discharge controls; public information and participation; new development and construction controls; and watershed assessment and monitoring. San Mateo County and the City of Daly City are required to maintain, implement, and enforce an effective stormwater management plan. Any potential discharges from the recycled water pipeline to the sewer system in Daly City during regular maintenance would be subject to the applicable provisions of the SMCWPPP.

Daly City General Plan

Daly City's Resource Management Element (1989) of the City's General Plan contains objectives and policies providing direction regarding the conservation, development, and use of natural resources, including water resources. Objectives and policies that relate to water quality resources and apply to this Project are listed below.

> *Objective 1: Maintain existing potable water quality*
>
> *Policy 1.1*: Continue to purchase water from San Francisco and blend this water with City well water to maintain good water quality
>
> *Objective 2: Reduce water consumption*
>
> *Policy 2.1*: Reduce average per capita demand by implementing effective water conservation programs that address all applicable methods of water conservation
>
> *Objective 3: Increase existing water supply*
>
> *Policy 3.1*: Determine the costs and benefits of using reclaimed wastewater for irrigating landscaped medians, golf courses, cemeteries, parks, and school playgrounds
>
> *Policy 3.3*: Protect areas such as cemeteries, golf courses, and other large open space areas which contribute to the recharge of the Daly City Aquifer

City and County of San Francisco Combined Sewer NPDES Permit

San Francisco currently holds NPDES permits adopted by the RWQCB that cover the Oceanside Water Pollution Control Plant, the Southeast Water Pollution Control Plant, the North Point Wet Weather Facility, and all of the wet-weather facilities, including combined sewer discharges to the bay or ocean. The permits specify discharge prohibitions, dry-weather effluent limitations, wet-weather effluent performance criteria, receiving water limitations, sludge management practices, and monitoring and reporting requirements. The permits prohibit discharges from the combined sewer structures during dry weather, and require wet-weather discharges to comply with the nine minimum controls specified in the federal Combined Sewer Overflow Control Policy.

Construction stormwater discharges from sites served by the combined sewer system are subject to requirements of Article 4.1 of the San Francisco Municipal Code, which incorporates and implements the City's NPDES municipal stormwater permit and the nine minimum controls described in the federal Combined Sewer Overflow Control Policy which includes the development and implementation of a pollution prevention program. Since the majority of the proposed Project occurs within San Francisco and is served by the combined sewer and storm drain system, construction within this area would be subject to the requirements of San Francisco's water pollution prevention program in lieu of coverage under the NPDES General Construction Permit. Thus, for construction activities within San Francisco, the City would not be required to prepare a formal SWPPP, but would be required to comply with Article 4.1 requirements.

Discharges during dewatering must also comply with Article 4.1, as supplemented by Order No. 158170. Section H of the Industrial Waste Ordinance prohibits discharge of groundwater or water from sumps into the sewage system without a permit. This provision requires the discharger

to submit a permit application to SFPUC Wastewater Enterprise at least 45 days prior to any dewatering discharge.

San Francisco Western Shoreline Plan

The San Francisco Western Shoreline Plan (CCSF, 1996) is a subarea plan of San Francisco's long-term general plan which is also referred to as the Master Plan. The policies of the Local Coastal Program in addition to a summary of objectives from various portions of the City's Master Plan are compiled in the Western Shoreline Plan for compatibility among other plans. Objectives and policies that relate to water resources in the proposed Project area are listed below:

> *Objective 5*: Preserve the recreational and natural habitat of Lake Merced, and
>
> *Policy 5.3*: Allow only those activities in Lake Merced area which will not threaten the quality of the water as a standby reservoir for emergency use.

3.12.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this EIR and consistent with Appendix G of the *CEQA Guidelines*, the proposed Project is considered to have a significant hydrology and water quality impact if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map (not applicable);

- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury, or death including flooding as a result of the failure of a levee or dam; and
- Inundation by seiche, tsunami, or mudflow.

Approach to Analysis

Impacts to hydrology and water quality resulting from construction and operation of the proposed Project are discussed below. This discussion describes how construction activities and operation of the proposed Project would affect the drainage patterns, water quality of receiving water bodies, and groundwater table. Other issues addressed include potential flood hazards associated with the proposed Project. Based on the proposed Project and its physical setting, certain significance criteria described above are not applicable to the Project. These criteria are briefly described below.

Effect on Groundwater Levels. The proposed Project would not involve construction of facilities such that there would be an adverse long-term effect on groundwater levels. The proposed irrigation pump station and the underground storage tank would be constructed on a site that is currently paved and used as a parking lot. The proposed pipeline would be installed underground along an existing roadway and would not interfere with the groundwater levels in the area. Refer to Impact 3.12-2 for short-term effects to groundwater. Thus, project implementation would not interfere with groundwater levels or supply in this area. No impact is expected.

Water Quality Effect from Storage of Recycled Water in Proposed Underground Storage Tank. Recycled water in underground reservoirs could seep through the reservoir and could potentially result in adverse effects on groundwater quality. The proposed underground storage tank would be designed and built with reinforced concrete, which would reduce the potential leakage of recycled water (Fugro West, 2008). Construction joints will have water stops to reduce the potential for leaks. Further, the stored water would be compliant with Title 22 requirements and would not have an adverse effect on water quality. Therefore, implementation of the proposed underground storage tank would not have adverse water quality effects on groundwater and no impact is expected.

Placement of Housing or Permanent Structures in 100-Year Flood Hazard Areas. The proposed Project does not include the construction of buildings or structures for human occupancy, or the permanent placement of structures that would impede or redirect flood flows within 100-year flood hazard zones. The proposed Project would not include the construction of any permanent aboveground improvements that might affect or be affected by a 100-year flood event. Thus, potential impacts related to the permanent placement of housing and structures within a 100-year flood hazard zone are not applicable and no impact is expected. Potential water quality impacts associated with construction activities in a 100-year flood hazard zone are discussed under Impact 3.12-4.

Inundation by Seiche, Tsunami, or Mudflow. The proposed storage tank and recycled water pipeline would be installed underground. The proposed pump station would be constructed above the underground storage tank within the existing Harding Park maintenance yard parking lot. Following construction, the proposed Project area would be restored to existing conditions. Since there would be no significant changes to the current hydrology and flooding conditions as described under Impacts 3.12-4 and 3.12-5, no impact associated with inundation from tsunami, seiches, or mudflow is expected.

Levee or Dam Failure. The proposed Project would not be located near a dam or levee. Thus, the proposed Project would not expose people or structures to a significant risk of flooding as a result of dam or levee failure. No impact is expected.

Construction Impacts

Impact 3.12-1: Degradation of water quality during construction. (Less than Significant with Mitigation)

Construction of the proposed facilities would involve earthmoving activities such as excavation, grading, soil stockpiling, and filling. Such activities expose soil from stockpiles and excavated areas. The soil can be transported by wind or water and, if not properly managed, can flow into storm drains or receiving waters. This could result in increased sediment load in receiving storm drains and adversely affect water quality. Construction activities could also involve use or handling of hazardous chemicals such as fuels, oils, antifreeze, coolants, and other substances which could adversely affect water quality if inadvertently released to nearby storm drains. These impacts would be considered potentially significant.

Since construction activities would occur over one acre of land, within Daly City, the contractor would be required to obtain a General Construction Permit and prepare a SWPPP as specified in Mitigation Measure 3.12-1a. Since the majority of the proposed Project occurs within San Francisco, construction activities are subject to the requirements of Article 4.1 of San Francisco's Public Works Code in lieu of coverage under the NPDES general construction permit as described under Section 3.12.2, Regulatory Framework. Compliance with existing permit conditions and implementation of applicable BMPs outlined in Mitigation Measure 3.12-1b, would minimize water quality impacts associated with construction activities. Example BMPs that relate to the handling of hazardous materials, spill prevention and clean up, and the handling of contaminated soil could include minimizing the storage of hazardous materials storage onsite, providing trainings on spill prevention and cleanup, and ensuring proper handling procedures for contaminated soils (California Stormwater Quality Association [CASQA], 2003). Such BMPs could be included into the SWPPP. In addition, incorporation of appropriate handling and safety measures (Mitigation Measure 3.13-1) as discussed in Section 3.13, Hazards and Hazardous Materials, would further reduce adverse effects on water quality during construction. Thus, incorporation of the required erosion control and stormwater runoff control measures as part of Mitigation Measures 3.12-1a and 3.12-1b, and implementation of Mitigation Measure 3.13-1 would minimize this impact to be less than significant.

Mitigation Measures

Measure 3.12-1a: For construction activities that would occur within Daly City, Daly City will file a Notice of Intent (NOI) to the SWRCB, develop a Storm Water Pollution Prevention Plan (SWPPP), and file a Notice of Termination (NOT) at the end of construction. The SWPPP will be maintained at the construction site for the entire duration of construction.

The objectives of the SWPPP are to identify pollutant sources that may affect the quality of stormwater discharge and to implement BMPs to reduce pollutants in stormwater discharges. At a minimum, the SWPPP would include the following:

- Site maps showing the construction site perimeter, existing and proposed structures, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and pre- and post-construction drainage patterns at the sites;
- Description of construction materials, practices, and designated areas for equipment storage and maintenance;
- List of contaminants with the potential to contact stormwater;
- Description of BMPs that minimize contact of contaminants with stormwater and minimize exposure of stormwater to construction materials, equipment, vehicles, and waste;
- Description of site-specific erosion and sedimentation control practices and BMPs to be implemented during construction (i.e., use of sandbag barriers or fiber bags around construction sites to break up slope length or flow), including the location where those BMPs will be placed;
- A schedule for inspecting and monitoring of BMPs; and
- Spill prevention and cleanup plan for rapid response to spills and/or emergencies.

Measure 3.12-1b: For construction activities within San Francisco, the contractor will implement the following BMPs required under the City's pollution prevention program and Article 4.1 of San Francisco's Public Works Code:

- Identify all storm drains and catch basins near the construction site and ensure all workers are aware of their locations to prevent pollutants from entering them.
- Protect all storm drain and catch basin inlets.
- Develop an erosion control and sediment control plan for wind and rain.
- Develop spill response and containment procedures.
- Inspect site regularly to ensure that BMPs are intact.
- Conduct daily site cleanings as needed.

- Educate employees and subcontractors about BMPs.
- Regularly maintain all BMPs at Project site.

The SFPUC must review and approve the erosion control and sediment control plan prior to implementation, and conducts periodic inspections to ensure compliance with the plan.

Impact Significance after Mitigation: Less than Significant.

Impact 3.12-2: Flooding due to siltation from construction activities. (Less than Significant with Mitigation)

As mentioned under Impact 3.12-1, proposed Project construction activities involving excavation and stockpiling could result in erosion and siltation. During wet weather events, construction activities could cause increased siltation, which could result in increased volume of surface runoff near construction sites along Lake Merced Boulevard. Thus, flooding associated with siltation from construction activities could result in a potentially significant impact. The potential for a flooding event, would however, be minimized by implementing sediment control and erosion control BMPs (Mitigation Measures 3.12-1a and 3.12-1b). Sediment control BMPs such as use of sand bag barriers, gravel bag berms, or fiber rolls would slow down or detain the flow of stormwater and would allow sediment to settle and be trapped and avoid sheet flow (CASQA, 2003). Thus, implementation of these BMPs described under Mitigation Measures 3.12-1a and 3.12-1b would ensure that impacts related to flooding are less than significant.

Mitigation Measures

See Mitigation Measures 3.12-1a and 3.12-1b.

Impact Significance after Mitigation: Less than Significant.

Impact 3.12-3: Discharge of contaminated water during construction. (Less than Significant with Mitigation)

Project construction would involve subsurface excavation, which may intercept shallow groundwater tables. Dewatering during construction for the pipeline and underground storage tank could temporarily affect groundwater levels in the shallow groundwater zones where subsurface excavation is required as part of the proposed Project. Groundwater tends to be shallowest in low-elevation areas near surface water features (such as Lake Merced) and therefore any ground disturbing activity beyond a few feet in depth could possibly encounter groundwater. Within the proposed Project area, groundwater levels tend to be deeper at the northern end at the proposed underground storage tank site and pump station site. Since groundwater levels are expected to be no higher than 30 feet at the underground storage tank site, and the proposed limits

of excavation are estimated at 28 feet, groundwater is not anticipated to be encountered during excavation activities. As the ground surface slopes downward in a southerly direction along the proposed pipeline route, the groundwater level becomes shallower. Between a point approximately 500 feet north of the intersection of Lake Merced Boulevard and Brotherhood Way, and the intersection of Lake Merced Boulevard and John Muir Drive, the highest groundwater levels were mapped as being less than 10 feet (Fugro West, 2008). Trench depths for the proposed pipeline could range between 4.5 feet to 10 feet below ground surface. Since the pipeline construction area would lie in areas characterized by shallower groundwater levels, groundwater would likely be encountered during pipeline construction.

Any groundwater that is encountered during excavation activities would have to be pumped out of the construction trench in order to create a dry work area. As required under San Francisco's Industrial Waste Ordinance and in compliance with the RWQCB's dewatering requirements, the contractor will obtain an industrial discharge permit from the SFPUC Wastewater Enterprise in order to discharge dewatered groundwater into the combined sewer system. The contractor would be subject to discharge standards prior to discharging into the sewer. Water from dewatering operations could contain materials used during typical construction activities such as silt, fuel, grease or other chemicals. Thus, the discharge from construction dewatering could contaminate downstream surface water, and could result in a potentially significant impact. Refer to Section 3.13, Hazards and Hazardous Materials for details on contaminated soil and groundwater. However, compliance with the dewatering permit requirement that would include proper testing and disposal of extracted water prior to disposal would ensure that this impact is less than significant (see Mitigation Measure 3.12-3). Following construction, all Project sites would be restored to existing conditions.

Mitigation Measures

Measure 3.12-3: The contractor will comply with the industrial waste discharge permit requirements by the SFPUC Wastewater Enterprise for dewatering activities.

- The SFPUC Wastewater Enterprise could require compliance with certain provisions in the permit such as treatment of the flows prior to discharge. The groundwater removed by dewatering would be discharged to the sanitary sewer system with authorization of and required permits from the applicable regulatory agencies, in this case SFPUC Wastewater Enterprise. The contractor will comply with applicable permit conditions associated with the treatment of groundwater within their jurisdiction prior to discharge. If necessary, a dewatering collection and disposal method will be identified at channel crossings.

Impact Significance after Mitigation: Less than Significant.

Operational Impacts

Impact 3.12-4: Change in impervious surfaces. (Less than Significant)

During wet weather events, impervious surfaces typically do not allow for stormwater infiltration and thereby create higher sheet flows on the surfaces. As a result, larger volumes of storm runoff accumulate and higher rates of flow eventually alter existing drainage patterns. Therefore, construction of impervious surfaces results in an increase in the rate and volume of surface runoff, potentially contributing to downstream flood impacts. However, most of the proposed facilities would be installed underground except for the pump station and radio antenna. The Harding Park pump station would be approximately 24 feet by 19 feet, with a height of 16 feet. The pump station would be built on top of an existing paved parking lot. The drainage patterns would be similar to the current drainage patterns. Therefore, no significant change in storm runoff is anticipated. After Project construction, all Project sites would be restored to pre-project conditions. This impact would be less than significant.

Mitigation: None required.

Impact 3.12-5: Redirecting or impeding flood flows. (Less than Significant)

As mentioned in Section 3.12.1, the proposed Project area does not lie within a 100-year flood zone. However, areas that have been subject to flooding near the proposed Project area include the Vista Grande Canal across John Muir Drive into Lake Merced. Localized flooding has also occurred on the eastern side of Lake Merced Boulevard due to overflow of stormwater in the underground culvert leading to the Vista Grande Canal. Flooding in this canal may have caused several wash-outs of the roadway and banks of the lake. Since the proposed pipeline and underground storage tank would be constructed below grade (for construction-related impacts, see Impact 3.12-1), and because the disturbed areas would be restored to existing conditions, operation of these facilities would not impede or redirect flood flows once constructed. The proposed pump station would be constructed above the underground storage tank within the maintenance yard's parking lot. Since this would be located in an already developed area, operation of this facility would not obstruct flood flows. Thus, impacts related to flooding hazards would be less than significant. Refer to the discussion for Impact 3.12-2 for information regarding potential flooding impacts during construction of the proposed facilities.

Mitigation: None required.

Impact 3.12-6: Discharge of contaminated water to surface water. (Less than Significant with Mitigation)

As noted in Chapter 2, Project Description, the potable water pipes that are modified at Harding Park would be disinfected by flushing chlorinated water through the system before bringing the pipeline into service. These discharges would also need to be treated through dechlorination and pH adjustment as required by the SFPUC Wastewater Enterprise's industrial discharge permit and consistent with implementation of Mitigation Measure 3.12-3. Routine maintenance activities for the recycled water pipeline would require a similar process. Blow-off assemblies that would be installed at low points along the proposed pipeline would need to be drained to either a landscaped area or to the sewer system. Note that, consistent with the SWRCB Recycled Water Policy, incidental runoff would not be allowed under the industrial discharge permit. Discharges to the sewer system would be required to comply with Article 4.1 of the San Francisco Public Works Code and with requirements outlined in the industrial waste permit as described in Mitigation Measure 3.12-3. With implementation of control measures in compliance with these regulatory requirements, water quality impacts associated with these maintenance discharges to SFPUC's combined sewer system and Daly City's stormwater system would be less than significant.

Mitigation Measures

See Mitigation Measure 3.12-3 above.

Impact Significance after Mitigation: Less than Significant.

Impact 3.12-7: Surface and groundwater quality affected by recycled water. (Less than Significant)

The Porter-Cologne Water Quality Control Act (discussed in the Regulatory Framework above) designates the SWRCB responsible for formulating and adopting state policy for water reclamation, while the CDPH is responsible for establishing uniform statewide reclamation criteria to ensure that the use of recycled water would not be detrimental to public health. Under Title 22 water quality criteria set forth by CDPH, the tertiary recycled water generated by the North San Mateo County Sanitation District (District) qualifies for the highest allowable uses, including agricultural irrigation of food crops, landscape irrigation with high public contact, and non-restricted recreational impoundments. To be used as a source supply for these designations, the recycled effluent would at all times be adequately oxidized, coagulated, clarified, filtered, and disinfected effluent. To be considered adequately disinfected, the median number of coliform organisms in the effluent may not exceed a most probable number (mpn) of 2.2 per 100 milliliters over a seven day period and turbidity would be required to be below 2 NTU. The District's recycled water treatment plant currently treats recycled water to tertiary levels and, therefore, meets Title 22 requirements for disinfected tertiary recycled water.

The CDPH has also produced *Guidelines for Use of Reclaimed Water*, which apply to recycled water use areas receiving water that meets Title 22 Water Recycling Criteria. The guidelines focus on application and management specifications for various recycled water uses, including general use requirements, landscape irrigation requirements, impoundment requirements, and agricultural reuse area guidelines. General requirements include posting signs to inform the public in areas where recycled water is in use, confining recycled water to authorized use areas, using purple recycled water distribution and transmission system piping to indicate that it contains recycled water, and other requirements designed to ensure that recycled water use does not adversely affect public health. Specific requirements established by Title 22 that are applicable to the proposed Project are contained in Article 4, Section 60310 – Use Area Requirements, which restricts irrigation of disinfected tertiary recycled water within 50 feet of any domestic water supply well unless specific technical analyses are conducted. Additionally, Section 60310 restricts impoundment of disinfected tertiary recycled water within 100 feet of any domestic water supply well.

Average nitrate concentrations recorded from two groundwater monitoring wells at the southern end of Lake Merced were less than 0.3 mg/L (SFPUC, 2008). The MCL for nitrate (as nitrogen) for drinking water is 10 mg/L. Nitrate is absorbed by plants, and is readily immobilized in the unsaturated zone through absorption. However, once in the groundwater, nitrate is relatively stable and mobile. Therefore, the potential for nitrate loading to affect groundwater quality within the area of irrigation is considered low.

The over-application of recycled water would have the potential to affect surface water quality if this resulted in surface ponding or direct runoff to local creeks or other water bodies. Daly City's existing NPDES permit allows the City to produce a maximum of 2.77 million gallons per day of recycled water treated to tertiary level. In order to provide recycled water to Harding Park, an amendment to this existing NPDES permit would be required. This Project would likely be subject to incidental runoff control measures outlined in the State Recycled Water Policy. The SWRCB Recycled Water Policy also encourages every region in California to develop a salt/nutrient management plan by 2014 that is sustainable on a long-term basis and that provides California with clean, abundant water. These plans shall be consistent with the Department of Water Resources' (DWR) Bulletin 160, as appropriate and shall be locally developed, locally controlled and recognize the variability of California's water supplies and the diversity of its waterways. Compliance with the Title 22 guidelines and continued compliance with the City's NPDES permit would prohibit over-application of recycled water (and subsequent ponding or surface runoff). Continued implementation of these measures would ensure that Title 22 requirements are met, that surface waters are protected, and that potential impacts to groundwater levels and water quality would be less than significant.

Mitigation: None required.

3.12.4 References – Hydrology and Water Quality

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3.13 Hazards and Hazardous Materials

This section describes the Hazards and Hazardous Materials conditions in the proposed Project vicinity and evaluates the potential for the proposed Project to result in significant impacts related to Hazards and Hazardous Materials. The description of existing conditions relies on a review of available regulatory databases, as well as information gathered from the Association of Bay Area Governments (ABAG).

3.13.1 Setting

Definitions

Hazardous materials, defined in Section 25501(h) of the California Health and Safety Code, are materials that, because of their quantity, concentration, or physical or chemical characteristics, pose a substantial present or potential hazard to human health and safety or to the environment if released to the workplace or environment. Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications as well as in residential areas to a limited extent. A waste is any material that is relinquished, recycled, or inherently waste-like. In accordance with Title 22 of the California Code of Regulations, Division 4.5, Chapter 11, a waste is considered a hazardous waste if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases) in accordance with the criteria established in Article 3. Article 4 lists specific hazardous wastes and Article 5 identifies specific waste categories, including Resource Conservation and Recovery Act (RCRA) hazardous wastes, non-RCRA hazardous wastes, extremely hazardous wastes, and special wastes.

Potential Receptors/Exposure

The sensitivity of potential receptors in the areas of known or potential hazardous materials contamination depends on several factors, the primary factor being an individual's potential pathway for exposure. Exposure pathways include external exposure, inhalation, and ingestion of tainted air, water, or food. The magnitude, frequency, and duration of human exposure can cause a variety of health affects ranging from short-term acute symptoms to long-term chronic effects. Potential health effects from exposure can be evaluated in a health risk assessment. The principle elements of exposure assessments typically include:

- Evaluation of the fate and transport processes for hazardous materials at a given site;
- Identification of potential exposure pathways;
- Identification of potential exposure scenarios;
- Calculation of representative chemical concentrations; and
- Estimation of potential chemical uptake.

Records Search

A regulatory database search of existing sites within and immediately adjacent to the Project area was conducted for the purpose of this analysis (Department of Toxic Substances Control [DTSC] and State Water Resources Control Board [SWRCB], 2009). The database search involved a search of the DTSC (EnviroStor) and SWRCB (Geotracker) environmental databases for sites with documented use, storage, or release of hazardous materials or petroleum products. The databases identified sites that have had reported releases of hazardous materials or waste including active contaminated sites that are currently under assessment and/or remediation. Some of the sites found on these databases include facilities or sites that are closed either because the contamination levels were found to be below regulatory thresholds requiring remediation, or remediation has satisfied the regulatory agency overseeing the effort.

The Geotracker database includes sites found on the Spills, Leaks, Investigations, and Cleanups (SLIC) program as well as the Leaking Underground Fuel Tank (LUFT) program both of which are overseen by the Regional Water Quality Control Board (RWQCB). A summary of each active site found within or in the vicinity of the Proposed Project site is presented below.

- *Higuera Avenue Garage, 19 Higuera Avenue*: A gasoline release was discovered at this site in 1989. The case was closed in 1996 and no further details were provided in the case summary. The site is located approximately one-eighth of a mile east of the northern end of the Project area.

- *Daly City Fire Department, 151 Lake Merced Boulevard*: A petroleum leak was reported in 1996, which reportedly impacted subsurface soils. The case was closed in 2000 and no further information was available. The site is located approximately a quarter mile south of the southern end of the Project area.

- *Daly City Wastewater Treatment Plant, 153 Lake Merced Boulevard*: This site involves a release of gasoline which was first reported in 1990. The current status is shown as an open case undergoing verification monitoring. The site is located approximately a quarter mile south of the southern end of the Project area.

- *Chevron Service Station, 892 John Daly Boulevard*: A gasoline leak was reported in 1991. Numerous soil and groundwater investigations as well as groundwater monitoring reports have been conducted for the site to determine the extent of contamination. The current status of the case is open. The site is located approximately 0.5 miles south of the southern end of the Project area.

- *Westlake French Cleaners, 247 Westlake Center*: A leak of tetracholorethylene (TCE), a common solvent used in dry cleaning operations, was discovered in 2002. Since that time, the site has been under investigation and a report of findings is due to the San Mateo County Environmental Health Department by August 12, 2009. The site is located approximately 0.5 miles south of the southern end of the Project area.

According to the Envirostor database, no Superfund sites, State Response Sites, Voluntary Cleanup Sites, or School Cleanup sites are located within or relatively near the Project area (DTSC, 2009). In addition, there were no military evaluations or DTSC corrective actions located

within or near the Project area. However, a DTSC Evaluation site is located near the Project site and is described below:

- San Francisco Police Department, Pistol Range, John Muir Drive and Skyline Boulevard: Since the 1940s, this site has been used as a shooting range and as a result of the presence of lead shot, surface soils have been impacted by lead. No lead was found in the groundwater. A sampling program was completed in 1990 and found only sporadic locations with high lead concentrations.

In addition, The Pacific Rod and Gun Club, located on 14 acres of property along the shores of Lake Merced (South Lake) approximately a half mile to the west of the Project area, has been used for skeet and trap shooting since 1928. Although the use of lead shot was discontinued in 1994 and biodegradable targets have been used since 2000, soil and sediment quality have been affected by the historical use of lead shot and clay pigeons at this facility; the primary constituents of concern are lead, arsenic, copper, and polynuclear aromatic hydrocarbons (URS, 2005).

3.13.2 Regulatory Framework

Federal

The U.S. Environmental Protection Agency (USEPA) is the lead agency responsible for enforcing federal regulations that affect public health or the environment. The primary federal laws and regulations include: the Resource Conservation and Recovery Act of 1974 (RCRA); the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA); and the Superfund Amendments and Reauthorization Act of 1986 (SARA). Federal statutes pertaining to hazardous materials and wastes are contained in Title 40 of the Code of Federal Regulations.

RCRA was enacted to provide a general framework for the national hazardous waste management system, including the determination of whether hazardous wastes are being generated, techniques for tracking wastes to eventual disposal, and the design and permitting of hazardous waste management facilities. In 1984, the Hazardous and Solid Waste Amendment was enacted to better address hazardous waste; this amendment began the process of eliminating land disposal as the principal hazardous waste disposal method. Other specific areas covered by the amendment include the regulation of carcinogens, listing and delisting of hazardous wastes, permitting for hazardous waste facilities, and leaking underground storage tanks.

CERCLA, also known as Superfund, was enacted to ensure that a source of funds was available to clean up abandoned hazardous waste sites, compensate victims, address releases of hazardous materials, and establish liability standards for responsible parties. SARA amended CERCLA in 1986 to increase the Superfund budget, modify contaminated site clean up criteria and schedules, and revise settlement procedures. SARA also provides a regulatory program and fund for underground storage tank cleanups and the Emergency Planning and Community Right-to-Know Program (EPCRA).

In 1976, Congress passed the Toxic Substances Control Act (TSCA) which was implemented in 1979. This act governs the manufacture, processing, distribution in commerce, use, cleanup,

storage, and disposal of polychlorinated biphenyls (PCBs). Since 1978, the U.S. EPA has promulgated numerous rules further addressing all aspects of the life cycle of PCBs. The most recent rule was the "Final Rule: Amendments to the TSCA PCB Disposal Regulations Including Amendments to the PCB Notification and Manifesting Rule" promulgated on June 24, 1999. This rule is deregulatory in nature and provides individuals with more flexibility in their PCB disposal practices while continuing to provide protection from unreasonable risk.

Hazardous Materials Worker Safety Requirements

The federal Occupational Safety and Health Administration (Fed-OSHA) and the California Occupational Safety and Health Administration (Cal-OSHA) are the agencies responsible for assuring worker safety in the handling and use of chemicals in the workplace. The federal regulations pertaining to worker safety are contained in Title 29 of the Code of Federal Regulations, as authorized in the Occupational Safety and Health Act of 1970. They provide standards for safe workplaces and work practices, including standards relating to hazardous materials handling. In California, Cal-OSHA assumes primary responsibility for developing and enforcing workplace safety regulations; Cal-OSHA standards are generally more stringent than federal regulations.

The state regulations concerning the use of hazardous materials in the workplace are included in Title 8 of the California Code of Regulations, which contain requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal-OSHA also enforces hazard communication program regulations, which contain worker safety training and hazard information requirements, such as procedures for identifying and labeling hazardous substances, communicating hazard information relating to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees.

State

The California Department of Toxic Substances Control (DTSC) and the RWQCB are the primary state agencies regulating hazardous materials in California. These agencies are part of the Cal-EPA. The RWQCB is authorized by the State Water Resources Control Board to enforce provisions of the Porter-Cologne Water Quality Control Act of 1969. This act gives the RWQCB authority to require groundwater investigations when the quality of groundwater or surface waters of the state is threatened, and to require remediation of the site if necessary. The DTSC is authorized by the USEPA to regulate the management of hazardous substances, including the remediation of sites contaminated by hazardous substances.

California hazardous materials laws incorporate federal standards but are often stricter than federal laws. The primary state laws include: the California Hazardous Waste Control Law (HWCL), the state equivalent of RCRA; and the Carpenter-Presley-Tanner Hazardous Substances Account Act (HSAA), the state equivalent of CERCLA. State hazardous materials and waste laws are contained in the California Code of Regulations, Titles 22 and 26.

The HWCL, enacted in 1972 and administered by the DTSC, is the basic hazardous waste statute in California and has been amended several times to address current needs, including bringing the state law and regulations into conformance with federal laws. This act implements the RCRA "cradle-to-grave" waste management system in California, but is more stringent in its regulation of non-RCRA wastes, spent lubricating oil, small-quantity generators, transportation and permitting requirements, as well as in its penalties for violations. The HWCL also exceeds federal requirements by mandating the recycling of certain wastes, requiring certain generators to document a hazardous waste source reduction plan, requiring permitting for federally exempt treatment of hazardous wastes by generators, and implementing stricter regulation of hazardous waste facilities.

The HSAA, enacted in 1981, addresses similar concerns as CERCLA. The primary difference is in how liability is assigned for a site with more than one responsible party. This is important for petroleum cleanup sites because federal law is usually used to force responsible-party cleanups; state law is used for petroleum cleanup sites that are exempt from CERCLA.

Other relevant State of California statutes include:

- The Hazardous Waste Source Reduction and Management Act, which, beginning in 1991, required large-quantity generators to document the hazardous wastes being generated and to prepare a documented waste reduction plan.
- The Hazardous Waste Management Reform Act of 1995, which required the DTSC to revise its regulations to more closely conform to federal hazardous waste identification criteria and essentially eliminate land disposal restrictions for California-only hazardous wastes, among other major changes. However, many of these changes have been deferred to a DTSC advisory committee for further study and are not expected to be implemented for several years, and in certain cases, not at all.

The Bay Area Air Quality Management District, a regional regulatory agency, may impose specific requirements on remediation activities to protect ambient air quality from dust or other airborne contaminants.

Wildland Fire

The California Public Resources Code, beginning with Section 4427, includes fire safety regulations that: restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors[1] on construction equipment that use an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided onsite for various types of work in fireprone areas. The Public Resources Code requirements would not apply to construction activities at the Project site, because it is not in or near areas designated by the California Department of Forestry and Fire Protection (CDF) as a "Wildland Area That May Contain Substantial Forest Fire Risks and Hazards" (CDF, 2009).

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[1] A spark arrestor is a device that prohibits exhaust gases from an internal combustion engine from passing through the impeller blades where they could cause a spark. A carbon trap is commonly used to retain carbon particles from the exhaust.

Local

In accordance Chapter 6.11 of the Health and Safety Code (Section 25404, et seq.), local regulatory agencies enforce many federal and state regulatory programs through the Certified Unified Program Agency (CUPA) program, including:

- Hazardous materials business plans (Chapter 6.95 of the Health and Safety Code, Section 25501 et seq.)
- The California accidental release prevention program for acutely hazardous materials (Chapter 6.95 of the Health and Safety Code, Section 25531 et seq.)
- State Uniform Fire Code requirements (Section 80.103 of the Uniform Fire Code as adopted by the state fire marshall pursuant to Health and Safety Code, Section 13143.9)
- Underground storage tanks (Chapter 6.7 of the Health and Safety Code, Section 25280 et seq.)
- Aboveground storage tanks (Health and Safety Code Section 25270.5[c])
- Hazardous waste generator requirements (Chapter 6.5 of the Health and Safety Code, Section 25100 et seq.)

Daly City

The Environmental Health Department of San Mateo County oversees a number of toxic programs for Daly City that include regulating hazardous materials usage, waste generation and 24-hour emergency response services. The Environmental Health Department is also the responsible CUPA agency for Daly City.

San Francisco

The Environmental Health Section of the San Francisco Department of Public Health is the responsible CUPA agency for the city of San Francisco. The Environmental Health Section is also responsible for implementing the Hazardous Materials Program and the Local Oversight Program.

3.13.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this EIR and consistent with Appendix G of the *CEQA Guidelines*, the Harding Park Recycled Water Project is considered to have a significant hazards and hazardous materials impact if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 1/4 mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- For a project located within an area covered by an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;
- Expose people or structures to a significant risk of loss, injury, or death involving fires.

Approach to Analysis

Based on the proposed Project plans and its geographical location, the proposed Project would not result in impacts related to the following criteria. No impact discussion is provided for these topics for the following reasons:

Hazardous Emissions Near School. The proposed Project would not require significant quantities of hazardous materials or wastes nor would it emit hazardous emissions as part of operations. Hazardous materials usage would be limited to the construction period and involve limited quantities of hazardous materials such as fuels, oils, lubricants, and hydraulic fluids. In addition, there are no schools located within a 0.25 miles of the proposed Project site. The nearest schools to the proposed Project site include Our Lady of Mercy Elementary in Daly City and Bridgemont Junior High and High School, both located approximately 0.5 miles from the proposed Project site.

Hazardous Materials Site. The proposed Project site is not included among sites that are part of Government Code Section 65962.5 according to the available databases reviewed for this analysis. However, some sites on the list are located near the proposed Project site and are discussed in Impact 3.13-1.

Airport and Airstrip. The proposed Project site is located more than two miles from any public airport or private airstrip. The nearest airport or airstrip is the San Francisco International Airport which is located approximately 6 miles southeast from the proposed Project site.

Interfere with Emergency Response Plan or Evacuation Plan. The proposed Project would not include any permanent aboveground features that could affect any adopted Emergency Response or Evacuation Plans. During the construction period, traffic control would be implemented to facilitate trenching, but also allow traffic passage to be maintained.

Fires. According to mapping compiled by ABAG using data from the California Department of Forestry and Fire Protection, the proposed Project site is located in a fire threatened community (ABAG, 2009). However, the proposed Project site is located in an urban area that is serviced by the corresponding local city fire departments. In addition, the proposed Project does not include the construction of any aboveground features that could be subject to damage from wildland fires and no habitable structures are included in the proposed Project elements. Therefore, there would be no potential impact from any wildland fires.

Construction Impacts

Impact 3.13-1: Hazardous materials in soil and groundwater. (Less than Significant with Mitigation)

The proposed Project would require the excavation of subsurface materials for placement of pipelines and the proposed storage tank. As described above in the Setting section, there are a number of sites located either within or relatively close to the proposed Project site that have had documented releases of hazardous materials. If hazardous materials are present in excavated soil or groundwater, a release to the environment could occur, and construction workers and the public could be exposed to the hazardous materials in the soil and groundwater. Depending on the nature and extent of any contamination encountered, adverse health effects and nuisance vapors could result if proper precautions are not taken. The greatest potential for encountering contaminated soil and groundwater during construction is in areas where past or current land uses may have resulted in leaking fuel or chemical storage tanks or other releases of hazardous materials have occurred. According to the review of environmental databases, the majority of the sites in the area of the proposed Project site involved a release of gasoline which typically does not affect soils much beyond the point of release. The closest release site to the proposed Project site is the Higuera Avenue Garage site which has been closed since 1996 (DTSC, 2009). The Westlake French Cleaners site had a release of a TCE, which is a solvent commonly used in dry cleaning operations. TCE is highly soluble and once it enters the groundwater it can migrate relatively easily beyond the point of release. This site is located approximately 0.5 mile south of the southern most end of the proposed Project site and groundwater dewatering is not likely to occur as part of construction but if encountered could be necessary. With implementation of dewatering requirements, as specified in Mitigation Measure 3.12-3 (see Section 3.12, Hydrology and Water Quality) and with implementation of appropriate handling and safety measures as required by Mitigation Measure 3.13-1, the potential impacts of encountering either contaminated soil or groundwater would be less than significant.

Mitigation Measures

Measure 3.13-1: The engineer will incorporate the following requirements into the contract specifications:

- The contractor will prepare a Site Health and Safety Plan identifying the potential chemicals present, potential health and safety hazards, monitoring to be performed during site activities, soils-handling methods required to minimize the potential for

exposure to harmful levels of any chemicals identified in the soil, appropriate personnel protective equipment, and emergency response procedures.

- The contractor will prepare a Materials Disposal Plan that specifies the methods for stockpiling suspect soils, protocol for profiling suspect soils, disposal method and approved disposal site for any potential contaminated soil and will provide written documentation that the disposal site will accept the waste.

Impact Significance after Mitigation: Less than Significant.

Impact 3.13-2: Release of hazardous materials from construction equipment. (Less than Significant)

Storage and use of hazardous materials at construction sites could result in the accidental release of hazardous materials such as oils, grease, hydraulic fluids, or fuels. If accidentally released, such hazardous materials could expose construction workers, the public, or the environment to adverse effects. However, as discussed in Section 3.12, Hydrology and Water Quality, the proposed Project would require preparation of a Stormwater Pollution Prevention Plan (SWPPP) with stormwater protection measures that typically include protections against accidental releases of hazardous materials during construction. The SWPPP would also include protection measures for the temporary onsite storage of diesel fuels used during construction, including requirements for secondary containment and berming of the diesel storage area (or any chemical storage areas) to contain a potential release and to prevent any such release from reaching an adjacent waterway or stormwater collection system. The erosion control plan prepared for San Francisco projects in compliance with Article 4.1 of the San Francisco Public Works Code would also include measures to prevent a release of hazardous materials from the proposed Project site. Adherence to these measures would result in a less than significant impact related to accidental releases of hazardous materials used during construction.

Mitigation: None required.

3.13.4 References – Hazards and Hazardous Materials

Association of Bay Area Governments (ABAG), *Wildland Urban Interface Fire Threat,* http://gis.abag.ca.gov/website/Fire_Threat_WUI/viewer.htm, accessed April 21, 2009.

California Department of Forestry, Wildland Fire Protection, http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland.php, accessed April 24, 2009.

Department of Toxic Substances Control (DTSC), *EnviroStor Database Results,* http://www.envirostor.dtsc.ca.gov/public/map.asp?global_id=&x=-119.1357421875&y=37.82280243352756&zl=5&ms=640,480&mt=m&findaddress=True

&city=DALY%20CITY&zip=&county=&federal_superfund=true&state_response=true&voluntary_cleanup=true&school_cleanup=true&corrective_action=true&permit_site=true&permit_and_ca_site=true, accessed April 17, 2009.

State Water Resources Control Board (SWRCB), *Geotracker Database,* http://www.geotracker.swrcb.ca.gov/map/, accessed April 17, 2009.

URS Corporation, *Draft Technical Memorandum: Lead Shot Characterization and Risk Assessment, Pacific Rod and Gun Club at Lake Merced,* January 2005.

3.14 Energy Resources

This section addresses energy resources related to construction and operation of the proposed Project. This evaluation is based on field reconnaissance, and a review of adopted general and regional plans.

3.14.1 Setting

Electric Utility Providers

San Francisco Public Utility (SFPUC) Power Enterprise

SFPUC Power Enterprise provides electricity to City and County of San Francisco (San Francisco) facilities (including tenants) and to San Francisco International Airport and its tenants. SFPUC Power Enterprise also sells electricity to Norris Industries (a federal facility), provides electricity for the municipal and agricultural pumping loads of the Modesto and Turlock Irrigation Districts, and sells electricity to other public agency wholesalers. While the quantity of power produced exceeds San Francisco's municipal power needs on an annual basis, San Francisco must supplement its power sources to meet municipal demand and its contractual obligations during the summer and fall months, at which time power generation is reduced so that water can be stored.

Pacific Gas and Electric Company

Pacific Gas and Electric Company (PG&E) provides natural gas and electricity to most of Northern California, including Daly City and San Francisco. PG&E, the local public utility and energy supplier, produces and purchases electricity from both renewable and non-renewable resources, with power derived from fossil fuels, nuclear and hydroelectric sources. PG&E has an electricity generation portfolio that totals 6,000 megawatts (MW) and consists of 44 percent hydroelectric, 54 percent nuclear from the Diablo Canyon plant, and 2 percent from fossil fuels. This portfolio supplies about 43 percent of PG&E's demand (PG&E, 2009). To meet the electricity demands of its customers, PG&E supplements its generation portfolio by procuring about 57 percent of its electricity demand from other independent power producers or co-generators, as well as from other utilities outside of the state (PG&E, 2009).

Natural Gas

PG&E's gas is delivered via high-pressure pipelines to its load centers with compressors used to maintain transmission pressure. The gas is then received at either an underground storage facility or redistributed through another series of pipelines (California Gas and Electric Utilities, 2008).

Current Energy Use

While per capita electricity consumption in the United States has increased by nearly 50 percent over the past 30 years, per capita California energy use during this period has been approximately

flat (CEC, 2005). This is the result of continued progress in cost-effective building and appliance standards and ongoing enhancements in efficiency programs. These combined efforts have reduced peak capacity needs by more than 12,000 megawatts and continue to save about 40,000 gigawatt-hours (GWh) per year of electricity.

Even though California's increases in energy use are small relative to the rest of the country, electricity consumption in California grew from 250,241 GWh in 2001 to 270,927 GWh in 2004. Electricity use is predicted to grow between 1.2 and 1.5 percent annually, from 270,927 GWh in 2004 to between 310,716 and 323,372 GWh by the end of the 2016. Industry-wide, California's water infrastructure uses large amounts of energy to collect and treat water; to dispose of wastewater; and to power the large pumps that move water throughout the state. Industry-wide energy usage for water infrastructure accounts for nearly 20 percent of the state's electricity consumption, one-third of non-power-plant natural gas consumption, and about 88 million gallons of diesel fuel consumption (CEC, 2005). The California Energy Commission (CEC) states that, if not coordinated and properly managed on a statewide basis, water-related electricity demand could ultimately affect the reliability of the electrical system during peak demand periods when reserves are low (CEC, 2005).

According to the CEC, industry experts estimate that untapped energy efficiency opportunities in water and wastewater treatment range from 5 to 30 percent. In the mid-1990s, the Electric Power Research Institute and HDR, Inc. conducted an audit of the energy savings potential of water and wastewater facilities in California (CEC, 2005). The audit indicated that over 880 GWh could be saved through implementation of a variety of measures, including load shifting and installation of high-efficiency motors and pumps. The National Resources Defense Council (NRDC) and Pacific Institute further evaluated energy usage by water and wastewater systems, assessing the intensity of energy usage for components of the water supply and treatment system and identifying areas where energy efficiency could be achieved (NRDC and Pacific Institute, 2004).

3.14.2 Regulatory Framework

Federal

Energy Policy Act of 2005

The Energy Policy Act of 2005 seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under the Act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products, including buying hybrid vehicles, building energy efficient buildings, and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

State

2005 California Energy Action Plan II

The *Energy Action Plan II* is the state's principal energy planning and policy document (CPUC and CEC, 2005). The plan continues the goals of the original *Energy Action Plan*, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. In accordance with this plan, the first-priority actions to address California's increasing energy demands are energy efficiency and demand response (i.e., reduction of customer energy usage during peak periods in order to address system reliability and support the best use of energy infrastructure). Additional priorities include the use of renewable sources of power and distributed generation (i.e., the use of relatively small power plants near or at centers of high demand). To the extent that these actions are unable to satisfy the increasing energy and capacity needs, clean and efficient fossil-fired generation is supported.

The *Energy Action Plan II* includes the following energy efficiency action specific to water supply systems:

- Identify opportunities and support programs to reduce electricity demand related to the water supply system during peak hours, and opportunities to reduce the energy needed to operate water conveyance and treatment systems.

In 2002, California established its Renewable Portfolio Standard program,[1] with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. The CPUC subsequently accelerated that goal to 2010 for electrical corporations, and the CEC further recommended that the state increase the target for all retail electricity sellers to 33 percent by 2020. Because much of electricity demand growth is expected to be met by increases in natural-gas-fired generation, reducing consumption of electricity and diversifying electricity generation resources are significant elements of plans to reduce natural gas demand.

Local

San Francisco General Plan

Conservation Element

Policy 12.1: Incorporate energy management practices into building, facility, and fleet maintenance and operations.

Policy 12.3: Investigate and implement techniques to reduce municipal energy requirements.

Policy 12.4: Encourage investment in capital projects that will increase municipal energy production in an environmentally responsible manner.

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1 The Renewable Portfolio Standard is a flexible, market-driven policy to ensure that the public benefits of wind, solar, biomass, and geothermal energy continue to be realized as electricity markets become more competitive. The policy ensures that a minimum amount of renewable energy is included in the portfolio of electricity resources serving a state or country.

San Francisco Electricity Resource Plan

The *Electricity Resource Plan* for San Francisco presents an action plan to meet the growth in demand for electricity, as well as allow the shutdown of the Hunters Point power plant and replacement of the aging power plants at Potrero (SFDE and SFPUC, 2002). The main components of the plan include demand reduction through energy efficiency and load management; use of renewable energy resources such as solar, wind, and water; construction of medium-sized generation plants using the most efficient gas-fired generators and cogeneration plants;[2] construction of small-scale distributed generation such as fuel cells, package cogeneration plants, and micro-turbines; and improved power transmission from the Peninsula. The plan calls for a renewed commitment and an accelerated pace to achieving the goals of the 1997 Sustainability Plan, including the elimination of all fossil-fuel power; an energy supply based on renewable, environmentally sound resources; and maximum energy efficiency. Specific energy savings and production goals for each component of the *Electricity Resource Plan* are identified.

San Francisco Climate Action Plan

In February 2002, the San Francisco Board of Supervisors passed the *Greenhouse Gas Emissions Reduction Resolution* (Number 158-02) committing the City and County of San Francisco to a greenhouse gas (GHG) emissions reductions goal of 20 percent below 1990 levels by the year 2012. The resolution also directs the San Francisco Department of the Environment, the SFPUC, and other appropriate City agencies to complete and coordinate an analysis and planning of a local action plan targeting GHG emission reduction activities. In September 2004, the San Francisco Department of the Environment and the SFPUC published the *Climate Action Plan for San Francisco: Local Actions to Reduce Greenhouse Emissions* (Plan) (SFDE and SFPUC, 2004). Although the San Francisco Board of Supervisors has not formally committed the City to perform the actions addressed in the Plan, and many of the actions require further development and commitment of resources, it serves as a blueprint for GHG emission reductions, and several actions are now in progress.

3.14.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this EIR and consistent with Appendix G of the CEQA Guidelines, the proposed Project is considered to have a significant energy impact if it would:

- Encourage activities that result in the use of large amounts of fuel, water, or energy, or use these resources in a wasteful manner.

Approach to Analysis

This analysis uses information regarding fuel and electrical energy use during project construction and operations to determine whether project impacts to this resource are significant.

[2] Cogeneration is the production and use of electricity and heat from the same installation.

Sections 3.9, Public Utilities and Services and Section 3.12, Hydrology and Water Quality assess impacts to water supply and water resources.

Construction Impacts

Impact 3.14-1: Use of large amounts of fuel, water, or energy during construction. (Less than Significant with Mitigation)

Construction of the proposed Project would require the use of fuels (primarily gas, diesel, and motor oil) to operate construction machinery during excavation, grading, and materials hauling. An additional minor amount would be used for worker transportation to and from the Project site. The precise amount of construction-related energy is uncertain. Even so, the energy consumption for construction activities would not result in long-term depletion of non-renewable energy resources and would not permanently increase reliance on energy resources that are not renewable. Construction activities would not reduce or interrupt existing electrical or natural gas services due to insufficient supply.

Because Project-related construction energy demands would be unlikely to have a significant effects on PG&E's energy resources, energy consumption by construction activities would not constitute a significant impact. Energy reduction measures have been identified by the SFPUC through greenhouse gas reduction actions, which are listed in Section 3.7, Air Quality.

Implementation of Mitigation Measure 3.14-1 would require compliance with Bay Area Air Quality Management District (BAAQMD) Exhaust Control Measures. These measures ensure that fuel energy consumed in the construction phase would not be wasted through unnecessary idling or through the operation of poorly maintained equipment (see Section 3.7 Air Quality for more information). Therefore, implementation of Measure 3.14-1would reduce construction-related impacts on energy resources to a less-than-significant level.

Mitigation Measures

Measure 3.14-1: To limit exhaust emissions during the construction of the proposed Project the following exhaust controls, as set forth by the BAAQMD, will be implemented where applicable:

- Grid power will be used instead of diesel generators at all construction sites where it is feasible to connect to grid power. While it may not be practical to connect to grid power for pipeline projects (since construction sites keep moving along the alignments), grid power shall be used for projects with fixed locations, such as tunnel entry and exit shafts/portals.
- All proposed Project contracts specifications shall include Sections 2480 and 2485, Title 13, California Code of Regulations, which limit the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds, both California- or non-California-based trucks) to 30 seconds at a school or five minutes at any location. In addition, the use of diesel auxiliary power systems and main engines shall be limited to five minutes when within 100 feet of homes or schools while the driver is resting.

- All proposed Project contracts specifications shall include Section 93115, Title 17, California Code of Regulations, Airborne Toxic Control Measure for Stationary Compression Ignition Engines, which specifies fuel and fuel additive requirements; emission standards for operation of any stationary, diesel-fueled, compression-ignition engines; and operation restrictions within 500 feet of school grounds when school is in session.
- A schedule of low-emissions tune-ups shall be developed and such tune-ups shall be performed on all equipment, particularly for haul and delivery trucks. A log of required tune-ups shall be maintained and a copy of the log shall be submitted to the SFPUC on a monthly basis for review.
- Low-sulfur fuels shall be used in all stationary and mobile equipment.

Impact Significance after Mitigation: Less than Significant.

Operational Impacts

Impact 3.14-2: Use of large amounts of fuel, water, or energy during operations. (Less than Significant with Mitigation)

Energy resources would be required to pump recycled water from the Daly City facilities to Harding Park and distribute water for irrigation at Harding Park. Daly City estimates that it will pump recycled water supply from its facilities to the Harking Park storage tank partially during peak hours from 3:00 p.m. to 8:00 p.m. and again from 2:00 a.m. to 4:00 a.m. daily. Pumping for the irrigation of Harding Park would occur during off-peak hours between 8:00 p.m. and 4:00 a.m.

Daly City currently supplies 0.89 million gallons per day (mgd) as average daily supply during peak irrigation season and (see Table 2-1). Upon implementation of the Project, these numbers will increase by 0.39 mgd (44%) (see Table 2-2). This increase in demand will coincide with increased pumping and increased energy consumption for that pumping. As such, potentially significant impacts to energy resources could occur. The estimated increase in power consumption is approximately 25,000 kW-hr (kilowatt hour) per year.

Three new irrigation pumps will be installed at Harding Park as part of the proposed Project. Two of these pumps will supply the irrigation water while the third will serve as a standby pump. All three pumps have the capacity to provide 750 gallons per minute of water at a pressure of 95 pounds per square inch. Each pump has minimum motor size of 60 horse power (hp). PG&E supplies electricity to the existing distribution system. Power from PG&E is available at a voltage of 4kVA (kilovolt ampere). A 350 kVA transformer reduces the voltage from 4 kVA to 480(V). The Harding Park Project will require that this transformer be replaced with a 500 kVA transformer. While there is sufficient supply to accommodate this need, energy consumption from the grid will increase incrementally by approximately 75,000 kW-hr per year.

Operational impacts to energy resources could be potentially significant given the increase in energy supply that will be required for the pumping and irrigation of the recycled water. While the proposed Project will result in an increase in demand, operational energy use associated with the Project would not be considered wasteful with implementation of Mitigation Measure 3.14-2 (which is Mitigation Measure 4.15-2 from the WSIP Final PEIR) would reduce this impact to a less-than-significant level.

Mitigation Measures

Measure 3.14-2: Consistent with the Energy Action Plan II priorities for reducing energy usage, the SFPUC will ensure that energy efficient equipment is used in all WSIP projects. A repair and maintenance plan will also be prepared for each facility to minimize power use.

Impact Significance after Mitigation: Less than Significant.

3.14.4 References – Energy Resources

California Energy Commission (CEC), 2005. *Integrated Energy Policy Report,* November 2005.

California Energy Commission (CEC), 2008. *California's Major Sources of Energy.*

http://www.energy.ca.gov/html/energysources.html, updated July 1, 2008. Site accessed October 1, 2008.

California Gas and Electric Utilities, 2008. *2008 California Gas Report.*

Natural Resources Defense Council (NRDC) and Pacific Institute, *Energy Down the Drain, the Hidden Costs of California's Water Supply,* August 2004.

Pacific Gas and Electric (PG&E), 2008. "Company Profile." http://www.pgecorp.com/corp_responsibility/reports/2006/company_overview.html, accessed on January 22, 2009.

San Francisco Planning Department, 2008. Final Program Environmental Impact Report on the San Francisco Public Utilities Commission's Water System Improvement Program. State Clearinghouse No. 2005092026. Certified October 30, 2008.

CHAPTER 4
CEQA Alternatives

4.1 Introduction

The CEQA Guidelines, Section 15126.6(a), state that an environmental impact report (EIR) must describe and evaluate a reasonable range of alternatives to the proposed Project that would feasibly attain most of the project's basic objectives, but that would avoid or substantially lessen any significant adverse environmental effects of the project. An EIR is not required to consider every conceivable alternative to a proposed project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. CEQA Guidelines Section 15126.6(e) states that, "The specific alternative of 'no project' shall also be evaluated along with its impact." The EIR must evaluate the comparative merits of the alternatives and include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project.

4.1.1 Harding Park Recycled Water Project Goals and Objectives

As described in Chapter 2, Project Description, the proposed Project is part of the San Francisco Public Utilities Commission's (SFPUC) Water System Improvement Program (WSIP) and would contribute to its goals of diversifying regional water supplies through the development of recycled water as an alternative water supply for non-potable uses. The specific objectives of the proposed Project include:

- Provide up to 0.39 mgd of recycled water to meet average daily demand for irrigating Harding Park;
- Diversify the SFPUC's water supplies for the San Francisco retail service area, consistent with WSIP requirements to reduce retail customer demand;
- Develop a new water supply that is both reliable and drought-resistant; and
- Reduce the use of potable water and groundwater for irrigation and other non-potable uses by supplying those demands with recycled water.

The City of Daly City (Daly City) is partnering with the SFPUC to promote the above objectives for the benefit of the San Francisco retail service area through full and productive use of its recycled water facility for recycled water production. The concept of the proposed Project was considered throughout the development of the WSIP Program Environmental Impact Report (PEIR) as part of

its overall strategy to meet or offset retail demand for water in San Francisco through a combination of conservation, recycling and groundwater projects.

4.2 Alternatives Analysis

In accordance with CEQA requirements, appropriate alternatives for EIR analysis are those that:

- Are feasible and meet most of a project's basic objectives, even if the alternatives would impede to some degree the attainment of project objectives or would be more costly;
- Avoid or substantially lessen significant environmental impacts of the proposed project; and
- Foster informed decision-making and public participation.

The alternatives selected for comparative analysis were determined based on a review of the proposed Project's objectives (presented above), significant effects expected to result from the proposed Project (characterized in Chapter 3), and a review of issues raised during the scoping process (summarized in Table 1-1 in Chapter 1). The analysis presented in this EIR indicates that implementation of the proposed Project would not result in any significant unavoidable impacts with the possible exception of incrementally contributing to some unavoidable secondary effects of growth by potentially "freeing up" potable water for new development (refer to Chapter 5). That impact is associated with implementation of the WSIP as a whole and, consequently, was addressed through the alternatives analysis in the WSIP PEIR. Refer to Chapter 9 of the WSIP PEIR for further information regarding development and evaluation of water supply portfolio alternatives.[1] For the proposed Project, the alternatives analysis in this chapter focuses on identifying alternatives that would meet CEQA requirements and address this specific Project's objectives and impacts.

4.2.1 Alternative 1 – No Project

Description

Under the No Project Alternative, the proposed recycled water pipeline, pump station, and underground storage tank would not be constructed. Harding Park likely would continue to use potable water from the SFPUC Regional Water System and that, consequently, there would be no concomitant increase in the availability of potable water.

Impacts

The No Project Alternative would avoid the short-term and long-term impacts associated with implementing the proposed Project, including (for example) disruption of traffic and disturbance from noise (see Chapter 3 for details). Existing irrigation utilizing potable water for Harding Park would continue.

[1] Chapter 9 of the WSIP PEIR, CEQA Alternatives, is available online at: http://www.sfgov.org/site/uploadedfiles/planning/vol4_ch9_wsip-dpeir.pdf

This alternative would not result in the beneficial water management effects of the proposed Project, including reduction of potable water consumption for irrigation. By continuing to draw from potable supplies for irrigation, this alternative could incrementally exacerbate the shortage of potable water supplies during dry years. Implementation of this alternative would not meet any of the basic Project objectives, nor contribute to the overall goals and objectives of the WSIP.

4.2.2 Alternative 2 – Mitigated Project

Description

The intent of this alternative is to avoid or further reduce some of the impacts associated with pipeline construction. Alternative 2 would include installation of a temporary noise barrier between construction and residences from Station 1+00 to Station 8+00; and microtunneling between Stations 8+50 and 24+00, and Stations 24+00 and about 32+00, maintaining the pipeline on the west side of Lake Merced Boulevard in this stretch as well as to the north between Station 32+00 and 36+50, where the proposed alignment continues north.

The pipeline alignment proposed as part of the proposed Project and described in Chapter 2, Project Description, crosses Lake Merced Boulevard from the east side to the west side at Station 11+00, then crosses west into the median/western northbound travel lane at Station 24+00, then crosses west into the western southbound travel lane at about Station 36+50 (see Figures 2-3c, 2-3f, and 2-3h in Chapter 2). The *Preliminary Design Report for the Harding Park Recycled Water Project* (Daly City/SFPUC, 2008) identified pipeline route segments on the opposite side of Lake Merced Boulevard;[2] the proposed alignment evaluated in this EIR is a hybrid of the two route alternatives considered in that document. The proposed alignment was selected for the following reasons:

- *Utility Conflicts*. Numerous utility lines pass beneath and cross Lake Merced Boulevard. The selected route generally has fewer potential utility conflicts than other options. The presence of numerous utilities complicates design and construction, and relocating utilities (where reasonable to do so) increases Project costs and extends the duration of construction. Utility relocation also can result in service disruption to customers.

- *Disruption to Lake Merced Hills Residents*. The proposed route avoids crossing Lake Merced Hills Drive on the east side of Lake Merced Boulevard, thereby reducing potential disruption to residential traffic and utility service to this area. Lake Merced Hills Drive is the only roadway access point to this residential area and utilities serving the area follow this road.

- *Easements*. The pipeline route is entirely within public property controlled by Daly City and San Francisco.

- *Area for Construction Staging*. There is more space for construction equipment on the west side of Lake Merced Boulevard than on the east side due to sloping terrain and roadways intersecting Lake Merced Boulevard.

[2] For more information, refer to Figure 3.1 and Chapter 3 in *Preliminary Design Report for the Harding Park Recycled Water Project* (Daly City/SFPUC, 2008).

Although construction of the pipeline along the proposed alignment would not result in any unavoidable impacts, mitigation measures described in Chapter 3 will reduce, but not eliminate impacts. This analysis considers whether there are feasible alternative routes or construction methods that could:

- Reduce noise impacts to residences adjacent to the southernmost portion of the alignment (Station 1+00 to about Station 8+00—see Figure 2-3a and 2-3b in Chapter 2);
- Reduce disruption to traffic flow along Lake Merced Boulevard and its intersection with Brotherhood Way; and
- Reduce disruption of use of the Lake Merced Perimeter Trail where no detour routing is available (Station 11+50 to 23+00, see Figures 2-3c through 2-3e).

Opportunities to relocate the southernmost segment of the pipeline are constrained because the proposed pipeline must connect into the existing pipeline at the proposed location (Station 1+00); consequently, there are no logical route alternatives to this segment. However, noise impacts to residences along this segment of the alignment could be further reduced by installing a temporary sound barrier (such as three-quarter-inch plywood) adjacent to the eastern side of the existing pathway. The barrier would need to be high enough to break the line of sight between residences and construction activities.

Assuming open-trench construction (as is proposed), there is generally a trade-off between impacts to the Lake Merced Perimeter Trail and impacts to travel lanes and traffic flow on Lake Merced Boulevard: shifting the construction corridor out of the trail would shift it into more travel lanes. However, trenchless construction techniques, designed to avoid conflicts with surface uses, could be used in segments not overly constrained by the presence of subsurface utilities. There are several types of trenchless construction techniques potentially suitable for this size pipeline.

- *Microtunneling*. Microtunneling is a trenchless method that uses a remotely controlled Microtunnel Boring Machine combined with the pipe jacking technique (described below) to directly install pipelines underground in a single pass. Microtunneling does not require man-entry. The diameter of the tunnel is essentially the outside diameter of the pipeline. Excavated tunnel spoils are removed and the exterior of the pipeline is lubricated as construction progresses. This form of tunneling can be performed with less excavation than traditional (large-diameter) tunneling. Microtunneling is often used in areas where there are already numerous utilities and other subsurface structures, constraining potential tunneling alignments, and where subsurface materials are fairly homogeneous. Non-heterogeneous materials constrain the type of tunneling construction equipment that can be used and/or can complicate construction methods, in some cases (e.g., where boulders and clasts have been encountered) stopping tunneling operations and requiring the excavation and retrieval of tunnel boring machine. However, geotechnical investigations conducted for the Project at depths to 25 feet (Fugro, 2009) indicate that subsurface soils consist of artificial fill, sand and clay.
- *Bore-and-Jack*. This method requires the use of a horizontal boring machine or auger to drill a hole, and a hydraulic jack to push a casing through the hole under the crossing. As the boring proceeds, a steel casing pipe is jacked into the hole and the pipeline is installed in the casing. This process requires the excavation of pits typically 10 feet by 35 feet (depth

varies based on subsurface utilities and other features) at opposite ends of the crossing. Soil removed from pits would either be stockpiled and reused, or loaded directly into dump trucks and hauled away for disposal. If existing soil is not adequate for backfilling, then new material would be imported for backfilling. The proposed tunneling segment, however, may be too long for bore and jack construction to be feasible, so this technique appears less feasible than microtunneling.

- *Horizontal Directional Drilling (HDD)*. HDD involves drilling in arcs beneath a surface feature with a progression of increasingly larger drill bits. The pipe is fused together prior to installation, requiring 300-500 feet of staging near the tunnel entry shaft. HDD also involves the use of drilling muds for lubrication. HDD is used with pipes composed of plastic. The proposed material for the pipeline is ductile iron, which is not suitable for HDD. Therefore, this technique is not suitable for this Project.

In terms of reducing disruption of traffic and trail use where no detour routing is available, the following are logical segments where trenchless construction techniques could be implemented:

- *Station 8+50 to Station 24+00*. Tunneling pits would be located in the open space area near Station 8+50 and at the open space area adjacent to the trail and parking area north of Station 24+00. The pits would be approximately 10 feet wide by 35 feet long and approximately 20 to 30 feet deep. Major utilities near Station 8+50 include a 60-inch diameter water main (the Sunset supply line) and 16-inch water line; major utilities near Station 24+00 include a 60-inch storm drain and 11-foot by 10-foot horseshoe sewer. Microtunnel pit construction could require sheetpile driving for shoring. Sheetpile driving can generate substantial vibration and noise. For this mitigated alternative, holes would be predrilled or other construction techniques used to minimize the potential for vibration from pile driving to adversely affect utilities close to the pits and to reduce noise and vibration to nearby residences and other sensitive receptors.

- *Station 24+00 to about Station 32+00*. A tunneling pit would be located in the open space area to the west of Station 32+00 and the Lake Merced Perimeter Trail. Terminating the tunnel at Station 32+00 on the west side of Lake Merced Boulevard would require that the pipeline cross a large number of utilities, potentially slowing construction and increasing project costs.

This alternative would be more costly to implement and would prolong the pipeline construction schedule because microtunneling is more expensive and usually takes longer (e.g., less than 100 feet per day) than open-trench construction. The Project is proposed to be constructed between major golf tournaments at Harding Park. Although this alternative would likely prolong pipeline construction, it would not affect the construction schedule for the pump station and storage tank and, consequently, would not conflict with the golf tournament schedules.

Impacts

The primary benefits of Alternative 2 are: reduced loss of travel lanes on Lake Merced Boulevard; reduced impacts to pedestrian and bicycle access to the Lake Merced Perimeter Trail; and reduced noise impacts to residences closest to Project construction. Tradeoffs associated with this alternative include:

- *Prolonged Construction Schedule*. Tunneling generally takes longer than open trench construction because it requires excavation and shoring of boring and receiving pits and more time-consuming excavation for pipeline installation.
- *Concentration of Impacts at Tunneling Pits*. Although tunneling would avoid surface-disturbance impacts associated with open-trench construction, it would concentrate impacts at the tunnel entry shafts (and, to a lesser extent, the exit shafts). Tunneling sometimes requires 24-hour construction activities for ground control and groundwater management. If this were the case for Alternative 2, then noise impacts could be worse for receptors near the entry tunneling pit (and to a lesser extent the exit pit) because construction would occur during noise-sensitive nighttime hours. Noise from tunneling operations can be controlled through use of sound barriers between construction activities and sensitive receptors which, in the case of tunneling pits near Stations 24+00 and 32+00, would include recreationists using the Lake Merced Perimeter Trail. Although this alternative would avoid trail closure, noise and aesthetic impacts associated with tunneling activities would detract from the overall recreation experience of those continuing to use the trail. The pits and associated staging near the pits (all pipe would have to be lifted off trucks and dropped into the pits with cranes may cause the parking area for the Lake Merced Perimeter Trail to be shut down for an extended period of time. In addition, the open area near 32+00 was not considered for a staging area for the proposed project due visual impacts at this location. Installation of a tunneling pit at this location would be have an impact similar or greater than a staging area.
- *Increased Excavation and Truck Traffic*. Truck traffic also would be concentrated at the tunnel shaft areas and there would be larger quantities of excavated soil, requiring temporary stockpiling and/or offsite disposal.

Land Use

Alternative 2 would not result in permanent land use changes or changes to the character of the Project vicinity. Construction activities would temporarily disrupt existing land uses and land use activities due to traffic, noise, and air quality impacts for a slightly longer period of time than with the proposed Project, but the magnitude of traffic and noise impacts overall would be reduced because traffic disruption at Brotherhood Way would be less and noise impacts to those closest to the pipeline alignment would be reduced. Impacts associated with effects on the existing character of the vicinity and the temporary disruption of existing land use would be slightly greater but similar to the proposed Project.

Aesthetics

Short-term visual impacts during Project construction activities would be similar to those of the proposed Project (somewhat more prolonged at the microtunnel pits, but partially screened) and could be mitigated to less-than-significant levels; long-term impacts associated with pump station and storage tank development would be the same under this alternative. The proposed project avoids visual impacts at 24+00 and 32+00.

Cultural Resources

As there are no known archaeological resource sites within the Project area, impacts to cultural and paleontological resources would be the same as the proposed Project.

Transportation and Traffic

Alternative 2 would reduce the impact of the proposed Project on traffic by reducing the loss of travel lanes on Lake Merced Boulevard and avoiding construction through the Lake Merced Boulevard/Brotherhood Way intersection. Increased noise from truck traffic (no room is available for stockpiling of soil from pits). If the microtunneling device hits a boulder or an underground pipeline a large pit will be required to retrieve and realign the device. This pit may be located in Lake Merced Blvd and would have traffic impacts. The bus station at station 8+00 may have to be relocated for an extended period of time.

Noise

The sound barrier associated with Alternative 2 would reduce the noise impacts to Daly City residents near the southern portion of the pipeline, although development of the microtunneling pit near Station 8+50 would prolong construction activities near some of these residences. The alternative precludes the use of sheetpile driving (a substantial source of noise and vibration) and would require noise barriers in the event that nighttime construction activities (e.g. groundwater management) were required.

Air Quality

This alternative would not result in any permanent impacts on air quality since no permanent sources of emissions would result. Construction-related increases in criteria pollutants, diesel particulate matter, and GHG emissions would be expected to be similar, or incrementally greater, when compared to the proposed Project (more excavation would be required with the tunneling alternative to develop the microtunneling pits). These impacts would be reduced to less-than-significant levels with mitigation.

Recreation

Alternative 2 would not result in permanent changes to recreational resources in the Project vicinity. With this alternative, pedestrian and bicycle access along the Lake Merced Perimeter Trail would be maintained and there would be no trail closure in areas where no detour routing is available. The presence of a microtunnel construction site near the trail north of Station 24+00 and near Station 32+00 would detract from the overall recreation experience of those continuing to use the trail. Parking area for Lake Merced Trail may be shut down for an extended period of time.

Public Utilities and Services

Potential conflicts with existing utilities could be greater with this alternative. Project engineers would need to ensure that appropriate construction methods for excavation and shoring of the microtunneling pits would preclude damage to the major water, sewer and storm drain utilities nearby. Alternative 2 would require crossing a large number of utilities north of Station 32+00, prolonging construction and increasing the potential necessity for utility relocation and service disruption. Therefore, this alternative presents greater impacts to public utilities and services than

the Project. Section 3.9, Public Utilities and Services describes mitigation measures to reduce the impact to less than significant.

Biological Resources

Alternative 2 would have the same impacts to biological resources as the proposed Project. Although tree removal at the proposed pump station would also be required under this alternative, this would also be the case for the Project. Therefore, the long-term impacts related to tree removal would be similar to the proposed Project.

Geology and Soils

Potential erosion hazards during excavation and earthwork activities would be greater than that of the proposed Project due to the additional drilling and construction that would be required, but would remain less than significant with mandatory compliance with the National Pollutant Discharge Elimination System Program (NPDES) General Construction Permit. Therefore, Alternative 2 would have a somewhat greater impact to geology, soils, and seismicity relative to the Project.

Hydrology and Water Quality

During construction, Alternative 2 would have the potential to adversely affect surface water quality in Lake Merced due to increased erosion and sedimentation, accidental releases of hazardous construction materials, and groundwater dewatering. Due to the increased construction activities for tunneling under this alternative relative to the open-trench method of the proposed Project, there would be an anticipated increase in excavated spoils and construction debris. Therefore, this alternative would represent an incrementally greater potential for erosion and sedimentation and an increased risk of accidental releases of hazardous construction materials (such as tunneling lubricants and drilling muds) when compared to the proposed Project. Any groundwater produced during construction dewatering could also contain sediments and contaminants; however, mandatory compliance with the NPDES General Construction Permit would specify measures to protect water quality, thereby preventing significant impacts.

Hazards and Hazardous Materials

Because the general location of alternative is the same as the proposed Project, the potential to encounter contaminated soil or groundwater during construction activities would be the same. Overall, impacts to hazards and hazardous materials would be similar to the proposed Project.

Energy Resources

The duration of construction activities under Alternative 2 would be slightly longer resulting in a relative increase in construction-related fuel consumption. Impacts related to construction-related fuel consumption would be greater but similar when compared to proposed Project.

4.2.3 Alternative 3 – Expanded Service Area

Description

This alternative examines the use of the proposed recycled water pipeline by other nearby potential customers: San Francisco State University (SFSU) and Parkmerced. Daly City and SFPUC initially considered this concept as part of *The Harding Park Recycled Water Feasibility Study*; EIR preparers have investigated it further in this EIR in response to public comments received during the Project scoping process requesting that the demand projections for the proposed Project include the potential use of recycled water by other customers in the area. A concern expressed by the commenter was that installing a larger pipeline now would preclude the need to install a second pipeline in the future to serve additional customers. Note that studies conducted by Project engineers indicate that the diameter of the proposed pipeline is sufficient to provide service to other customers; consequently, there would be no need to install a second pipeline at a later date. At a minimum, implementation of Alternative 3 would require an expansion to the existing recycled water treatment facility, and construction of an irrigation pump station, storage tank, and ancillary facilities as described further below.

Information from studies conducted by Daly City on the potential provision of recycled water to SFSU is presented below. Daly City and SFPUC would need to further investigate the capacity requirements of the recycled water facility, and pumping, transmission, and storage facility requirements if this alternative were pursued. These modifications are depicted in **Figure 4-1**.

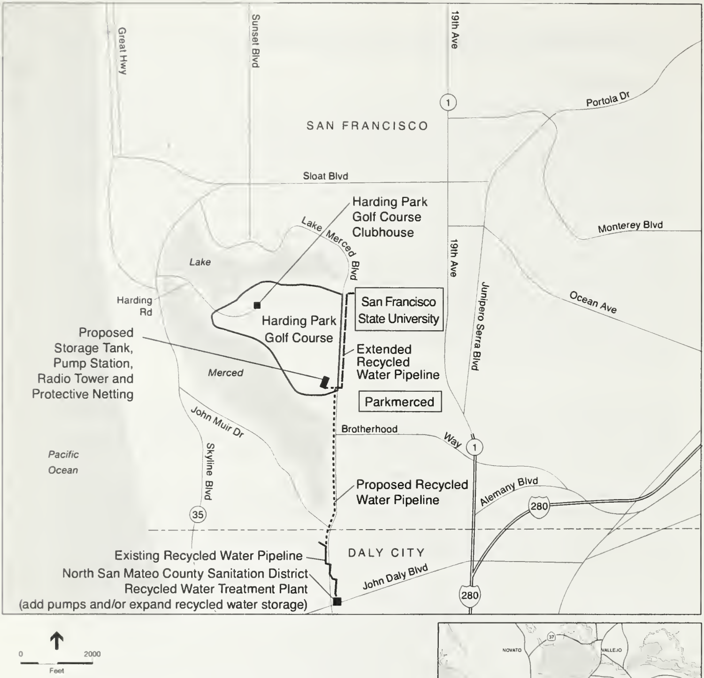
Implementing the proposed Harding Park Recycled Water Project does not include the analysis to allow for additional customer tie ins to the recycled water pipeline, nor does it preclude Daly City from proposing new connections and other requisite improvements to serve more customers in the future. Additional engineering and environmental studies would be required before such proposal could be implemented.

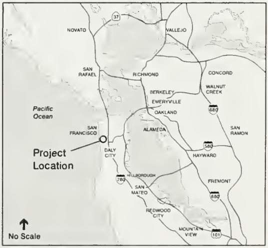
Recycled Water Treatment Facility

The existing capacity of the recycled water facility at the North San Mateo Sanitation District's (District) wastewater treatment plant could not accommodate additional customers during high demand periods without expanding existing facilities. As described in Table 5-1 in Chapter 5 of this EIR, Daly City is evaluating potential expansions to pumping and tertiary treatment capacity. The studies underway will investigate potential future customers east of I-280 in Daly City, north of Harding Park in San Francisco and potentially to the south in Colma.

Pumping and Transmission

Carollo Engineers determined that the proposed pipeline diameter (18 inches) could support delivery of a higher volume of recycled water, thereby enabling Daly City and SFPUC to expand recycled water service to additional customers in the future, provided that pumping capacity were expanded. The tertiary recycled water transmission study is evaluating service to a few limited possible customers to the north of Harding Park. The 18-inch pipeline is sufficiently sized to convey 5.7 mgd (assuming a design pipe velocity of 5 ft/sec). Therefore, Daly City and SFPUC





SOURCE: ESA

Harding Park Recycled Water EIR . 207704

Figure 4-1
Expanded Service Alternative

would not need to install a second recycled water pipeline.[3] However, this capacity could not be realized without significant improvements to recycled water production capacity at the District's recycled water facility.

Recycled Water Storage

Additional customers would also require the construction of an irrigation pump station, storage tank, and ancillary facilities at or near the customers' locations.

Currently, the District's wastewater treatment plant maintains two of its four equalization basins for recycled water storage. During a peak flow wet weather event, the recycled wastewater treatment plant may need to use all four basins to handle wet weather inflows. In this case, the equalization basin would have to be cleaned and disinfected before it is converted back to recycled water storage. Therefore, additional users would require long-term storage, or alternative water supplies to meet their needs when the equalization basins cannot be used for recycled water storage.

Impacts

All the facilities that are required to be constructed for the Project would also be required under this alternative. Furthermore, additional recycled water treatment capacity and the installation of additional transmission lines to serve the expanded area would be required under this alternative. A pump station, storage tank and ancillary facilities would also be needed to serve the expanded area. Therefore, by expanding the service area, this alternative would substantially increase the construction-related impacts of the Project without reducing any impacts associated with the Project or avoiding potential future impacts associated with constructing a second recycled water pipeline to serve other customers. CEQA requires the evaluation of a reasonable range of alternatives that will reduce or avoid any of the significant environmental impacts of the Project. This alternative does not satisfy this requirement and for this reason is not evaluated in any further detail.

4.3 Alternatives Comparison and Environmentally Superior Alternative

All identified significant and potentially significant impacts associated with the proposed Project could be mitigated to less-than-significant levels with the mitigation measures included in this EIR. Although most of the impacts identified for the alternatives could be mitigated to less-than-significant levels, the severity of impacts often varies between the alternatives and the proposed Project.

CEQA requires the identification of an environmentally superior alternative from among the project and the set of alternatives evaluated. As discussed above, the No Project Alternative would avoid all impacts associated with the proposed Project and, on this basis, would be environmentally superior.

3 The proposed pipeline alignment was not analyzed for a larger-diameter pipeline. A larger diameter pipeline may not be feasible on the proposed alignment at locations constrained by the presence of existing utilities.

The No Project Alternative also would not meet the Project's objectives nor achieve water supply benefits associated with use of recycled water. Alternative 2 satisfies the Project's objectives and would reduce the severity of traffic impacts as well as disruption of trail use where no detour routes are available. Provided that microtunneling pits can be excavated with methods that avoid the vibration and noise associated with sheetpile driving and that nighttime noise (if any) could be attenuated, this alternative would also reduce noise impacts on Daly City residents. Consequently, Alternative 2 is considered the environmentally superior to both the proposed Project and the No Project Alternative; however, this alternative would likely be substantially more costly to implement and likely carries a greater risk of disruption (and associated impacts with resolving the disruption) during construction. Alternative 3 is not a viable CEQA alternative because it does not reduce any of the Project's impacts.

4.4 Alternative Concept Considered But Rejected

One of the projects proposed under SFPUC's WSIP is the San Francisco Westside Recycled Water Project. The Westside Recycled Water Project, which is currently undergoing environmental review pursuant to CEQA, proposes to construct recycled water treatment, storage, and distribution facilities for recycled water customers in San Francisco. The San Francisco Westside Recycled Water Facility would be located within Golden Gate Park. The proposed facility would provide recycled water service to replace use of potable water for irrigation in some areas in order to meet the goals and objectives of WSIP. Originally, the Westside Recycled Water Project proposed to deliver recycled water to customers in western San Francisco including Harding Park. However, the Harding Park Recycled Water Feasibility Study (Daly City, 2007) concluded that the existing North San Mateo County Sanitation District recycled water treatment facility in Daly City had sufficient capacity to provide recycled water for the irrigation of Harding Park. Therefore, Harding Park was removed as a potential customer of the proposed Project.

If the proposed Project could not be implemented, SFPUC could propose to revise the Westside Recycled Water Facility to include service to Harding Park. Currently, the southernmost customer that would receive recycled water from the Westside Recycled Water Project is the San Francisco Zoo, to the northwest of Harding Park. Modifications to the Westside Recycled Water Project would be required to ensure that sufficient treated water was produced, stored and conveyed south to serve Harding Park. Depending on the connection point and alignment, a 2 to 2.5-mile long pipeline would be needed to tie into the proposed pipeline serving the Zoo. The storage tank and pump station at the maintenance yard would still be required. By implementing this alternative, the Project would still meet the basic objectives of the Project described above; however, this alternative does not appear to avoid or substantially lessen any significant adverse environmental effects of the Project. The impacts of constructing a pump station and storage tank at the maintenance yard likely would still occur, and impacts associated with in-road pipeline construction would still occur, although different roadway segments would be affected. The pipeline alignment length in the proposed project is 0.8 miles in comparison to the 2-2.5 miles that would be required under this alternative.

4.5 References

City of Daly City, San Francisco Public Utilities Commission, San Francisco Recreation and Park Department, *Preliminary Design Report, Harding Park Recycled Water Project*, May 2008.

CHAPTER 5
Other Topics Required by CEQA

This chapter contains other required CEQA statutory sections that evaluate the potential growth-inducing impacts, cumulative impacts of the proposed Project, and significant and unavoidable impacts.

5.1 Growth-Inducing Impacts

The proposed Project does not involve new home or business construction and therefore would not directly induce growth. However, indirect growth-inducing impacts could occur if the proposed Project were to remove barriers to growth or were to create conditions that encourage additional growth in the SFPUC service area.

This section analyzes the growth inducement potential of the proposed Project, as required by CEQA. CEQA Guidelines Section 15126.2(d) requires that an environmental impact report (EIR) evaluate the growth-inducing impacts of a proposed Project. A growth-inducing impact is defined as follows:

> [T]he ways in which the proposed Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth.... It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

The environmental effects of project-induced growth are secondary or indirect impacts of the project. Growth can result in a variety of indirect environmental impacts, including increased demand on community services and public service infrastructure; increased traffic and noise; and degradation of air and water quality.

5.1.1 Approach to Analysis

As described in Chapter 2, Project Description of this EIR, the proposed project is one component of the WSIP, and as such, its growth-inducement potential is considered in the context of the WSIP, the overall regional water system, and the SFPUC service area. The proposed Project would diversify the SFPUC's regional water supply by developing recycled water for irrigation purposes, thereby helping the SFPUC meet regional water demands within the Peninsula and San Francisco service areas. Insofar as the proposed Project would "free up" potable water for other uses, it could incrementally contribute to the growth inducement potential of the WSIP. The

WSIP PEIR (San Francisco Planning Department, 2008) conducted a detailed evaluation of the potential for that program as a whole to induce growth and cause secondary effects of growth. As stated in the WSIP PEIR (Summary, p. S-24):

> The PEIR provides a comprehensive analysis of growth inducement for the WSIP as a whole and the secondary effects of growth; therefore, these issues do not need to be reevaluated during the environmental review of each individual WSIP facility improvement project

This analysis incorporates by reference Chapter 7 of the WSIP PEIR, Growth-Inducement Potential and Indirect Effects of Growth. The full WSIP PEIR is available for review at http://www.sfgov.org/site/uploadedfiles/planning/vol4_ch9_wsip-dpeir.pdf.

5.1.2 Growth-Inducement Potential of the Project

As described in the PEIR, the WSIP water supply strategy for 2030 would meet customer water supply needs and increase delivery reliability throughout the system, thus removing inadequacies and deficiencies in the water supply system as one potential obstacle to growth within the SFPUC service area. The following is an excerpt from the Summary of the WSIP PEIR (p. S-62) that characterizes the WSIP's potential to induce growth and secondary effects associated with that growth:

> The WSIP would support planned growth in the existing SFPUC service area, although some growth associated with the availability of water would occur irrespective of the WSIP due to already planned increases in water delivery efficiencies throughout the service area (e.g., plumbing code changes), conservation, and other water supply sources. Some customers have multiple sources of supply and do not rely on the SFPUC system to meet all of their existing or future water demands; in these areas, other sources of supply may also support additional growth in the service area. In some areas, the WSIP could support a degree of population and/or employment above that planned for in jurisdictions' adopted general plans, as indicated by a comparison of the levels of growth assumed in WSIP demand studies and general plan documents. In some jurisdictions (Foster City, Half Moon Bay, and Burlingame), the WSIP could support more population growth than is forecasted in adopted general plans. In other jurisdictions (East Palo Alto, Foster City, San Bruno, Fremont, Newark, and Union City), the WSIP could support more employment growth than is forecasted in the adopted general plans of the respective jurisdictions.
>
> The existing service area includes areas in four counties (San Francisco, San Mateo, Santa Clara, and Alameda) that are within the core of the nine-county Bay Area. Growth in the communities served by the SFPUC regional system would primarily be infill development within already developed Bay Area communities. This growth is representative of the "smart growth" principles promoted by the Association of Bay Area Governments (ABAG) to minimize urban and suburban sprawl and concentrate additional development in the existing core areas.
>
> The WSIP would indirectly contribute to environmental impacts caused by growth; some of these impacts would be unavoidable. The WSIP would support some of the growth that is reflected in the adopted land use plans of jurisdictions in the SFPUC service area. The EIRs prepared for general plans and related land use plans in the service area identified impacts of planned growth and mitigation measures to reduce the impacts. Some of the impacts of planned growth cannot be reduced to a less-than-significant level. In these cases, the

respective decision-making body (e.g., city council) identified overriding considerations that justified adoption of the general plan despite its adverse impacts. Due to the longer planning horizon of the WSIP and relative age of some of the adopted general plans, as well as differing expectations about the level of job growth that will occur in the coming decades, in some jurisdictions not all of the growth that the WSIP would in part support has been addressed in adopted land use plans or evaluated in the plans' CEQA documents. Therefore, growth supported by the WSIP could result in impacts that are somewhat more severe than those identified in the general plan EIRs, although it is likely that the impacts would be similar in kind to those previously identified.

Potential impacts beyond those previously identified would generally be related either to increased density of development or to the conversion of less developed areas to urban uses. The measures specified in adopted general plans and related land use plans and their CEQA documents to mitigate the impacts of growth should also serve to reduce the impacts of growth supported by the WSIP. In addition, although the EIRs reviewed for this PEIR were prepared prior to the passage of the California Global Warming Solutions Act of 2006 and do not include assessments of impacts from greenhouse gas emissions, it is expected that planned growth in the area could result in a significant and unavoidable contribution to greenhouse gas emissions resulting from increased fossil fuel use for transportation, increased industrial and commercial activities, domestic fuel combustion, operation of power plants, and oil refining. The key regional effects of planned growth relate to air quality, traffic congestion, and water quality. Regional agencies, including the Metropolitan Transportation Commission, Bay Area Air Quality Management District, and Regional Water Quality Control Board, and the jurisdictions in the service area, are working both regionally and locally to address these impacts.

By providing water to support planned growth, the WSIP would help to mitigate the impact of insufficient water supply that was identified in the general plans EIRs of some jurisdictions in the service area.

5.2 Significant and Unavoidable Impacts

In accordance with Section 21067 of CEQA, and with Sections 15126(b) and 15126.2(b) of the CEQA Guidelines, the purpose of this section is to identify project-related environmental impacts that could not be eliminated or reduced to a less-than-significant level with implementation of all identified mitigation measures. The only unavoidable impacts associated with the project would be those associated with the secondary effects of growth, which have been previously disclosed in the WSIP PEIR, as discussed above.

5.3 Cumulative Impacts

The purpose of this analysis is to disclose significant cumulative impacts that would result from the implementation of the proposed Project in combination with other related past, present, and probable future projects in and beyond the project area. A cumulative impact is an impact that results from the combination of the impacts caused by the proposed project with those of other related projects which together result in compounded impacts.

5.3.1 CEQA Analysis Requirements

The CEQA Guidelines (Section 15130) require that EIRs discuss the cumulative impacts of a project when the project's incremental effect is "cumulatively considerable," meaning that the project's incremental effects would be significant when viewed in connection with the effects of related past, current, and probable future projects. The cumulative impact analysis may be less detailed than the analysis of the project's individual effects. The discussion of cumulative impacts should include:

- Either: (1) a list of past, present, and probable future projects producing related or cumulative impacts; or (2) a summary of projections contained in an adopted general plan or similar document, or in an adopted or certified environmental document, that described or evaluated conditions contributing to a cumulative impact;
- A discussion of the geographic scope of the area affected by the cumulative impact;
- A summary of expected environmental effects to be produced by these projects;
- Reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.

5.3.2 Projects Considered in the Cumulative Analysis

In accordance with the CEQA Guidelines, this cumulative impact analysis uses the list approach. The analysis considers the impacts of the proposed project in combination with past projects, projects currently under construction, and probable future projects that have or could potentially result in similar impacts as those resulting from construction and/or operation of the proposed Project, referred to collectively as "cumulative projects." For this analysis, cumulative projects include: (a) other Daly City projects or activities in the Daly City and San Francisco regions, and (b) non-Daly City projects or activities in the proposed Project area under the jurisdiction of other agencies or entities including San Francisco.

Table 5-1 lists cumulative projects identified by local and regional agencies or other entities as well as other projects in the project vicinity planned or proposed by the Daly City. This table presents the planning jurisdiction, a brief description, the estimated construction schedule associated with each cumulative project, the distance of the cumulative project to the project sites, and the project site potentially affected by the cumulative project. Project information listed in Table 5-1 is based on information supplied by Daly City, the SFPUC, and information from other entities as well as review of EIRs and information posted on agency websites.

In this table, projects shaded in grey are those that would contribute directly to physical environmental effects due to their proximity to project facility sites. Projects in *italics* are those with tentative construction schedules that could potentially overlap with the construction schedule for the proposed Project. Therefore, projects that are shaded in grey and in italics could overlap spatially and temporally with the proposed project, increasing the likelihood that cumulative impacts could result. Of the listed projects in Table 5-1, there are potentially two projects that are located in proximity to the project facility sites and also have construction schedules that could overlap with the proposed project.

TABLE 5-1
CUMULATIVE PROJECTS IN THE HARDING PARK RECYCLED WATER PROJECT VICINITY

Jurisdiction	Project Name and Locations	Project Description	Potential Cumulative Impact Topics	Estimated Construction Schedule
Daly City Projects				
CalTrans	John Daly Cloverleaf	On ramp to 280 S with plantings	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2009
Daly City	Junipero Serra Blvd. /John Daly Blvd. Medians	Median irrigation	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2009
Daly City	Traffic Signal Improvements (John Daly Blvd. & Sheffield Dr.)	Traffic signal improvements	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	Under construction; 2009
Daly City/ CalTrans	Widening of John Daly Bridge	Road improvements	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	Completed
Daly City	Westlake School	Athletic Field, turf and landscape irrigation	Construction-related traffic impacts on local access roads and associated air quality and noise impacts, recycled water use, water supply	2010-11
School District	Jefferson High School	Turf and landscape	Construction-related traffic impacts on local access roads and associated air quality and noise impacts, recycled water use, water supply	2010-11
Daly City	Marchbank Baseball Facility	Baseball Field		Completed
Daly City	Junipero Serra Blvd. Landscape Improvements	Wider pedestrian sidewalks, improved street trees, bus stops, median landscaping, traffic signals, and street lighting.		Completed
Daly City	Pacific Plaza - 2001 Junipero Serra Blvd.	Nine-story office building and parking structures		Complete
Daly City	Pacific Plaza - 2001 Junipero Serra Blvd.	Cinema and retail stores		Complete
Daly City	Pacific Plaza - 2001 Junipero Serra Blvd.	Proposed hotel with 200+ rooms, banquet facilities and restaurant	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	Under Design
Daly City	Doelger Senior Center – 101 Lake Merced Blvd.	Expanded and renovated cafeteria / kitchen, enlarged office work space and counter area.		Completed

TABLE 5-1 (continued)
CUMULATIVE PROJECTS IN THE HARDING PARK RECYCLED WATER PROJECT VICINITY

Jurisdiction	Project Name and Locations	Project Description	Potential Cumulative Impact Topics	Estimated Construction Schedule
Daly City Projects (cont.)				
Daly City	Westlake Park – 145 Lake Merced Blvd.	New sports field lighting		Completed
Daly City	Westlake Avenue Landscaping	Freeway off-ramp landscaping		Under Design
Daly City	Vista Grande Drainage Basin Alternatives Analysis	Program recommends construction of a new stormwater tunnel, construction of detention basin in Westlake Park and potential for treatment using wetlands	Construction-related traffic impacts on local access roads and associated air quality and noise impacts. Potential hydrology and water quality, biological impacts.	TBD. Alternatives Analysis underway; construction schedules will not overlap
Daly City	General Plan Update	Draft Housing Element proposes an increase of about 4,230 households between 2010 and 2030.	Increased traffic on local roads and associated air quality and noise impacts	TBD. Draft Housing Element published at the end of April 2009.
Daly City	*Recycled Water Booster Pump Station*	*This project is for the installation of a booster pump station to serve additional customers east of I-280.*	*Water quality impacts, water supply impacts*	*Project currently out to bid for completion in 2009-2010*
Daly City	*Tertiary Facilities Expansion*	*This feasibility study is evaluating the potential for expanding the tertiary facilities at the Daly City WWTP to increase recycled water production*	*Water quality impacts; water supply impacts*	*N/A - only feasibility study at this point in time*
Other SFPUC Projects in the Project Area				
San Francisco County	*San Andreas Pipeline No. 3 Installation*	*The project consists of the installation of 4.4 miles of 36-inch diameter pipeline from San Pedro Valve Lot in Daly City to Merced Manor Reservoir in San Francisco. There will be three jack and bore crossings along 19th Avenue and John Daly Blvd.*	*City of Daly City and San Francisco*	*September 2009 – January 2012*
San Francisco County	*Lake Merced Pump Station Essential Upgrades*	*Lake Merced Pump Station will be rebuilt; specific improvements include a new reinforced concrete structure, pumps, stand-by generator, security fencing, SCADA, monitoring and disinfection systems, and landscaping.*	*Lake Merced Boulevard & Brotherhood Way, San Francisco*	*March 2009 – July 2011*
San Francisco County	Lake Merced Groundwater Levels Restoration	The project consists of the development of a plan for operations and maintenance; construction of a stormwater treatment wetland, which will yield approximately 315 acre-feet per year for lake augmentation; and installation of up to two groundwater wells that will be used as the secondary water source to fill the lake.	John Muir Drive & Lake Merced Blvd., San Francisco	September 2012 – September 2014

TABLE 5-1 (continued)
CUMULATIVE PROJECTS IN THE HARDING PARK RECYCLED WATER PROJECT VICINITY

Jurisdiction	Project Name and Locations	Project Description	Potential Cumulative Impact Topics	Estimated Construction Schedule
Other SFPUC Projects in the Project Area (cont.)				
San Francisco County	North Westside Groundwater Basin Project	The first phase consists of the construction of four new groundwater well stations in the Sunset District of San Francisco. The second phase consists of improvements or replacement of two or more irrigation wells in Golden Gate Park	Sunset District of San Francisco; (note, one well housing will be located near the entrance to Lake Merced Pump Station)	January 2012 – September 2014
San Mateo County	Regional Groundwater Storage and Recovery Project	The project consists of the construction of 16 groundwater wells with a total capacity of 7.2 mgd. Five of the wells will be connected to the Daly City water system, six (or three each) will be connected to the water system in South San Francisco (operated by California Water Service Company) and San Bruno, and five will be connected to the SFPUC transmission system.	Numerous sites throughout northern San Mateo County. (Note nearest proposed well site to the project site is located south of John Daly Blvd., Daly City.	June 2012 – October 2014
CCSF (SFPUC)	Junipero Serra Sewer Improvement	Project to alleviate flooding along Junipero Serra by increasing the capacity of the sewer system along Junipero Serra from Lyndhurst to Eucalyptus	Construction-related traffic impacts on local access roads and associated air quality and noise impacts	2017
CCSF (SFPUC)	Westside Recycled Water	Project to produce and deliver approximately 2 million gallons per day (mgd) of recycled water to a variety of users on the Westside of San Francisco. The system would bring recycled water from the proposed recycled water treatment facility in Golden Gate Park to the San Francisco Zoo, Golden Gate Park, and Lincoln park and Golf Course.	Water quality impacts; water supply impacts, construction-related traffic impacts on local access roads and associated air quality and noise impacts	2011-2014. Currently under Design and environmental review.
CCSF (SFPUC)	Lake Merced Restoration Project Plan	Restoration of Lake Merced water levels using a supplemental source(s) of water (treated storm water, groundwater or SFPUC system water). Upgrades to the Lake Merced Pump Station to improve methods for adding dechlorinated system water and groundwater to the lake.	Water quality and hydrology impacts; biological resources impacts	N/A. Environmental Review was scheduled to begin in January 2009.
CCSF (MEA)	Parkmerced Long Range Plan	Long-term mixed-use development program that will increase residential density, provide new commercial and retail services and transit facilities, and improve utilities within the development site over 30 years. With project	N/A	N/A

TABLE 5-1 (continued)
CUMULATIVE PROJECTS IN THE HARDING PARK RECYCLED WATER PROJECT VICINITY

Jurisdiction	Project Name and Locations	Project Description	Potential Cumulative Impact Topics	Estimated Construction Schedule
Other SFPUC Projects in the Project Area (cont.)				
CCSF (MEA) (cont.)	Parkmerced Long Range Plan (cont.)	implementation, there would be a total of 8,900 units on the Project Site. The Proposed Project includes construction of (or provides financing for construction of) a series of traffic and infrastructure improvements on 19th Avenue and Brotherhood Way.		
Other Projects				
San Francisco State University (SFSU)	*2007 – 2020 Campus Master Plan*	*Improvements to SFSU's existing campus are proposed to support a proposed increase in student enrollment from 20,000 to 25,000 full-time students by the year 2020 including increased campus housing, emphasis on alternative transportation, and natural stormwater management.*	*Construction-related traffic impacts on local access roads, air quality and noise impacts, water quality and hydrology*	*Utility work on the Creative Arts Building anticipated to for August 2010 through January 2011.*
Colma	*Recycled Water Transmission Main Corridor Study*	*This feasibility study, currently underway, is evaluating the potential to use an existing SFPUC easement to install a new recycled water pipe to supply water to Colma.*	*Water quality impacts; water supply impacts*	*N/A - only feasibility study at this point in time*

SOURCE: Carollo (2009), City of Daly City (2009), SFPUC (2009)

5.3.3 Cumulative Impact Analysis

Significance Criteria

Daly City has not formerly adopted significance standards for impacts related to cumulative effects, but generally considers that implementation of the proposed project would have significant cumulative impacts if it were to:

- Have impacts that would be individually limited but cumulatively considerable ("cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past, present, and probable future projects)

Impact Summary

Potential cumulative impacts of the construction and operation of the proposed project are described in this section by environmental resource topic, since the geographic scope of the impact can vary by topic. Each impact discussion below assesses the potential for the proposed project as a whole to contribute to significant cumulative impacts when considered in combination with the effects of other projects listed in **Table 5-2**.

TABLE 5-2
SUMMARY OF CUMULATIVE IMPACTS

Impact Number and Topic	Cumulative Impacts
5.1: Land Use	LS
5.2: Aesthetics	LS
5.3: Cultural Resources	LS
5.4: Transportation and Traffic	LS
5.5: Noise	LS
5.6: Air Quality	LS
5.7: Recreation	LS
5.8: Public Utilities and Services	LS
5.9: Biological Resources	LS
5.10: Geology and Soils	LS
5.11: Hydrology and Water Quality	LS
5.12: Hazards and Hazardous Materials	LS
5.13: Energy Resources	LS

NOTE: The significance determinations presented in this table assume implementation of all federal/state/local regulations and mitigation measures identified in Chapter 3.

LS: Less than Significant Impact after Mitigation
S: Significant Impact After Mitigation (Significant and Unavoidable)

Land Use

Impact 5.1: Cumulative disruption of established communities and changes in existing land patterns.

With respect to land use impacts, the geographic scope of potential cumulative land use impacts encompasses the proposed underground storage tank and irrigation pump station site, the proposed pipeline alignment, and proposed staging areas.

The proposed Project would not contribute to any permanent cumulative changes in land use patterns since no permanent acquisition of easements or land would occur and therefore, no existing land uses would be permanently displaced. In the Harding Park maintenance yard, two parking spaces would be permanently removed, however SFRPD determined that replaced parking spots were not necessary. The cumulative projects listed in Table 5.1 include some other SFPUC projects, roadway improvements, and some development projects. Most of these projects would occur within already developed areas or would improve existing roads, and would not result in significant changes to existing land uses. Since the proposed Project would not result in a permanent change to existing land uses within the proposed Project area, the Project's contribution to permanent cumulative impacts on land use would not be cumulatively considerable (*less than significant*).

The proposed Project could contribute to cumulative land use impacts if the Project's construction schedule were to coincide with the schedules of the above projects, or if the duration of Project construction were to be extended such that construction-related impacts occur within the same geographic area. Because the proposed Project would not alter land use, cumulative land use impacts relate to physical impacts that indirectly affect land use during construction (e.g., aesthetics, traffic, air quality, and noise). Projects that could overlap in schedule with the proposed Project include the Lake Merced Pump Station Essential Upgrades, Westside Recycled Water Project (although schedule is tentative), turf and landscape improvements at Jefferson High School, and turf and landscape improvements at Westlake School.

Mitigation Measures: None required.

Aesthetics

Impact 5.2: Cumulative impacts on visual character.

For visual impacts, the geographic scope of potential cumulative impacts includes the Project facility sites and immediate vicinities, including proposed construction staging areas.

As described in Section 3.3, Aesthetics, the proposed Project would primarily result in short-term construction-related visual impacts and would be mitigated to a less-than-significant level with incorporation of Mitigation Measure 3.3-1 (maintenance of construction staging and Project

sites). However, since some tree removal would occur at the proposed storage tank and pump station site, partial views of the new pump station could be available from Lake Merced Boulevard, which could result in a long-term visual change. Additionally, netting would be installed for 10-15 years to shield cars parked in the Harding Park maintenance yard from golf balls until the replacement trees have matured. Note that this visual change would not result in any impacts to scenic resources as Lake Merced Boulevard is not considered a scenic roadway. As mentioned in Section 3.3, SFPUC plans to replant trees and shrubs around the perimeter around the maintenance yard parking lot. These trees would require up to 10 to 15 years to mature. The proposed Project may remove a maximum of 11 trees.

The cumulative projects listed in Table 5.1 include road improvement projects, some SFPUC projects, and commercial development projects in the proposed Project vicinity that could substantially alter the visual character of areas within the proposed Project area. While construction activities associated with the projects listed in Table 5.1, in combination with the proposed Project, could temporarily alter the visual character of existing and adjacent areas, most of the areas where cumulative development would occur are either underground, would replace existing facilities, or are in areas characterized by similar visual character. The staging area along John Muir Drive proposed for the proposed Project is adjacent to the Vista Grande Canal, the same location as the proposed Vista Grande Drainage Basin project. However, the Vista Grande Drainage Basin project is still in the planning stages and the specific locations of facilities and nature of improvements is still under development. Construction of the Vista Grande Drainage Basin project will not overlap with that of the proposed Project, and the proposed Project will have few operation-phase impacts and none in the vicinity of the Vista Grande Canal. The Lake Merced Pump Station Essential Upgrades project will overlap in time and location with the proposed Project. This may contribute to temporary impacts on the visual character of the area with increased construction equipment and staging areas. However, the long-term effects to the operations of these two projects would be less than significant as they both incorporate landscaping as an improvement to the Project area conditions.

When considered in combination with these projects, the proposed Project's incremental contribution to long-term visual impacts would not be cumulatively considerable (*less than significant*).

Mitigation Measures: None required.

Cultural Resources

Impact 5.3: Cumulative increase in impacts on archaeological, paleontological, and historical resources.

The geographic scope of potential cumulative impacts on cultural resources encompasses the archaeological and architectural CEQA areas of potential effects (C-APE) for the proposed Project facility sites and immediate vicinities.

As described in Section 3.4, Cultural Resources there is a potential to encounter previously unidentified cultural resources, including archaeological and paleontological resources, during construction of the proposed Project; however, implementation of Mitigation Measures 3.4-1 and 3.4-2 would reduce these potential impacts to less than significant. The potential to encounter cultural resources associated with the other cumulative projects listed in Table 5-1 is unknown, but does exist. However, since the proposed Project's impacts on archaeological and paleontological resources would be site-specific and mitigated to a less-than-significant level with implementation of Mitigation Measures 3.4-1 and 3.4-2, the proposed Project's contribution to any such impacts would not be cumulatively considerable (*less than significant*).

The proposed Project would not alter architectural/structural resources since no architectural/structural resources are listed in or eligible for listing in the federal, state, or local register are located within the C-APE. Project activities would be constructed entirely within the right-of-way of Lake Merced Boulevard, with no direct or indirect impacts to architectural/structural resources anticipated. Thus, the proposed Project would not result in a cumulative increase in impacts on historical architectural/structural resources.

Mitigation Measures: None required.

Transportation and Traffic

Impact 5.4: Cumulative traffic increases on local and regional roads.

The geographic scope of potential cumulative traffic impacts includes regional facilities (e.g., highways and freeways) and local roads providing access to the proposed Project vicinity.

Table 5.1 presents the planned public and private projects that could be under construction during the proposed Project construction period (March/April 2010 to August 2011). The majority of the projects are road improvement projects and some commercial projects proposed to occur within the Project vicinity. Cumulative traffic impacts associated with these developments include temporary short-term traffic increases related to construction vehicles traveling to and from the site. Since the proposed Project would not result in any permanent changes to existing land uses, no anticipated long-term traffic increases are expected to occur.

The proposed Project construction traffic would contribute incrementally to traffic from a few other private and public projects in the region that could be under construction or in operation at the same time. A portion of the vehicle trips destined to and from the proposed Westlake School and Jefferson High School turf and landscaping project, and the Junipero Serra Sewer Improvement (listed in Table 5.1) could use the same regional roadways and highways as construction traffic generated by the proposed Project. The Lake Merced Pump Station Essential Upgrades project will occur in the vicinity of the proposed Project and its construction schedule will overlap with the proposed Project's construction schedule. Additionally, San Francisco State University will be initiating the Campus Master Plan with the utility work required for the

Creative Arts Building (to be located at Font Boulevard and Lake Merced Boulevard) within the same timeframe of the proposed Project. Utility work is planned for August 2010 to January 2011, overlapping with the construction schedule for the proposed Project. Font Boulevard intersects with Lake Merced Boulevard approximately 1,900 feet north of Harding Park maintenance yard. Because Lake Merced Boulevard will be used by construction vehicles for each of these projects, the impacts may be cumulatively considerable.

As described in Section 3.5, traffic impacts for the proposed Project would be mitigated to a less-than-significant level with implementation of a Traffic Control Plan. The coordination of traffic control plans between these three projects would be required with the implementation of Mitigation Measure 5.4-1 to reduce the cumulatively considerable impact of the potential for multiple construction projects occurring in the same vicinity at the same time (*less than significant after mitigation*).

Mitigation Measures

Measure 5.4-1: In the event that more than one construction contract is issued for work along the proposed Project pipeline, and where construction could occur within and/or across multiple streets in the same vicinity, the SFPUC and construction contractor(s) will coordinate the traffic control plans in order to mitigate the impact of traffic disruption. The coordinated plan will include measures that address overlapping construction schedules and activities, struck arrivals and departures, land closures and detours, and the adequacy of on-street staging requirements.

Impact Significance after Mitigation: Less than Significant.

Noise

Impact 5.5: Cumulative increases in construction and/or operational noise.

The geographic scope of potential cumulative noise impacts encompasses the Project site and its immediate vicinity as well as areas adjacent to access and haul routes to the Project site.

Anticipated area projects would contribute to noise in the area due to increased traffic volumes. However, the proposed Project's increase in operational traffic would be minimal (associated with routine inspection and maintenance) and therefore traffic associated with development of the Project would not result in a cumulatively considerable noise impact along local roadways.

Mitigation Measures: None required.

Air Quality

Impact 5.6-2: Cumulative increases in construction and/or operational emissions.

According to the BAAQMD CEQA Guidelines, a cumulative impact occurs when two or more individual effects, considered together, are considerable or would compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant impacts, meaning that the Project's incremental effects are considerable when viewed in connection with the effects of past, current, and probable future projects. Notably, any proposed Project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact. Development of the proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant. The BAAQMD states that projects that would not lead to a significant increase of ROG, NOx, or PM_{10} emissions, the cumulative effect is evaluated based on a determination of the consistency of the Project with the regional clean air plan. The Project would not require a general plan amendment nor conflict with the clean air plan control measures. Therefore the proposed Project would not contribute considerably to any cumulative impacts on air quality (*less than significant)*.

Mitigation Measures: None required.

Recreation

Impact 5.7: Cumulative effects on recreational resources during construction.

The geographic scope of potential cumulative recreation impacts encompasses the Project facility sites and park and recreational facilities, including bicycle routes, in their immediate vicinities.

As discussed in Section 3.8, Recreation, the proposed Project would have the potential to affect recreational facilities adjacent to the Project area including Harding Park Golf Course, Westlake Park, the San Francisco Golf Club, the Olympic Club, and Lake Merced Golf Club. Direct impacts to bike lanes and pedestrian access to Lake Merced recreational facilities are expected to occur along portions of Lake Merced Boulevard as a result of construction activities of the proposed Project. In addition, the proposed Project would have the potential to temporarily affect the quality of the recreational experience indirectly at adjacent recreational facilities due to air, noise and traffic impacts during construction. Construction of the projects listed in Table 5.1 would have similar air and noise quality impacts during construction that could affect the quality of the recreational experience at facilities located nearby. In general, the potential for cumulative impacts on recreation would be specific to each facility site and would not combine to cause a cumulative impact. Therefore, the proposed Project in combination with other SFPUC and non-SFPUC projects would not contribute considerably to any cumulative impacts on recreational resources (*less than significant)*.

Mitigation Measures: None required.

Public Utilities and Services

Impact 5.8: Cumulative impacts related to disruption of utility service or relocation of utilities.

Construction of the proposed Project could disrupt existing utility services or require temporary or permanent relocation of utilities. Construction of other projects in the region could also increase the potential for such utility impacts, resulting in potential cumulative impacts. However, these potential impacts would be site-specific rather than additive because of the localized nature of utilities and services within the specific construction sites and the limited extent of area served by those utilities or services. Implementation of Mitigation Measures 3.9-3a through 3.9-3h would reduce disruption to utilities attributable to the Project. These measures combined with the temporary nature of potential utility disruptions would reduce the Project's impact to less than significant. Therefore, the Project's residual contribution to any cumulative impacts on utilities would not be cumulatively considerable *(less than significant)*.

The proposed Project's demand on landfills represents approximately less than one percent of the total existing landfill capacity in San Mateo County. In addition, San Mateo County and San Francisco have been in compliance with the California State-mandated 50 percent diversion rate since 2004. Even with cumulative increases in landfill demand as a result of other projects listed in Table 5.1, the proposed Project's contribution to cumulative construction-related demand on regional landfill capacity is minimal and would not be cumulatively considerable *(less than significant)*.

During Project construction, workers would occupy individual Project sites at different times during the approximate 12 to 16-month construction duration, and temporary increases in demand for law enforcement, fire protection, or emergency services could occur at active construction sites. Project construction combined with construction of other projects listed in Table 5.1 could result in temporary cumulative increases in demand for public services if they coincide in location and construction schedules overlap. As indicated in this table, there are potentially two other projects that could overlap temporally and spatially with the proposed Project in the Lake Merced area. Since construction contractors would be required to provide worker safety training in compliance with SFPUC procedures and comply with all fire code regulations, temporary cumulative increases in demand for law enforcement, fire protection, or emergency services in the vicinity of these SFPUC facilities would be reduced to less than significant at each of these project sites. Therefore, residual demand for these services would not be cumulatively considerable *(less than significant)*.

Mitigation Measures: None required.

Biological Resources

Impact 5.9: Cumulative loss of sensitive biological resources.

The geographic scope of potential biological resources impacts generally includes developed land supporting ruderal grassland and street tree plantings, while the surrounding area supports a mixture of willow riparian scrub, non-native forest, herbaceous zones, wetlands, and open water habitats within Daly City and San Francisco. Section 3.10 evaluates the impacts of the proposed Project on biological resources, including wetlands, sensitive habitats as defined by the CDFG, as well as local ordinance-protected trees, special-status plant and wildlife species potentially subject to state and federal protection. As indicated in Table 5.1, there could be cumulative impacts on sensitive biological resources located throughout the Project area when the construction impacts of the proposed Project are considered in combination with the construction impacts of other projects in the vicinity. Compliance with applicable state and federal regulations, general plan conservation measures, and Project-specific permitting requirements would mitigate these cumulative construction effects to some extent. However, it should be noted that one of the SFPUC projects (Lake Merced Restoration Plan) would restore habitat in the area, while the majority of the other listed projects would be located within or adjacent to urbanized areas of Daly City and San Francisco. This would help limit the potential for impacts on sensitive species and habitats in the future (as this project is still in the planning phase). For the proposed Project, implementation of mitigation measures that address common and special-status nesting birds and tree protection (Measures 3.10-1 and 3.10-3), could provide substantial reduction in impacts to affected biological resources. With implementation of these mitigation measures, the proposed Project's contribution to impacts associated with biological resources would be *less than significant*.

Mitigation Measures: None required.

Geology and Soils

Impact 5.10: Cumulative exposure of people or structures to geologic and seismic hazards.

The geographic scope of potential cumulative geologic and seismic impacts encompasses the proposed Project sites and cumulative projects in the immediate site vicinities. These types of impacts are generally site specific and depend on local geologic and soil conditions.

As described in Section 3.11, Geology and Soils, potential geologic and seismic impacts associated with implementation of the proposed Project include slope instability, erosion, various seismic hazards, and expansive or corrosive soils (Impacts 3.11-1 through 3.11-6). These potential impacts would be site-specific (i.e., dependent on local geologic and soil conditions) and would not be additive with impacts of other projects. Therefore, the proposed Project would not have any cumulative impacts related to geology, soils, and seismicity (*no impact*).

Mitigation Measures: None required.

Hydrology and Water Quality

Impact 5.11: Cumulative impacts related to the degradation of water quality, alteration of drainage patterns, increased surface runoff, and flooding hazards.

The geographic scope of potential cumulative hydrology and water quality impacts generally encompasses urban drainages, one underground culvert, and one canal within the proposed Project area.

As described in Section 3.12, Hydrology and Water Quality, Project construction and earthmoving activities could result in increased soil erosion and sediment load in downstream waters, and the discharge of hazardous construction chemicals into site runoff, thereby potentially adversely affecting surface water quality (see Impact 3.12-1). Discharges of groundwater produced during dewatering from Project construction activities also have the potential to affect surface water quality in downstream drainages (see Impact 3.12-3). Similarly, the projects listed in Table 5.1 could contribute to construction-related degradation of water quality, resulting in cumulative impacts. However, the Project's contribution to cumulative surface water quality impacts from construction and earthmoving activities would be less than significant with mandatory adherence to the National Pollutant Discharge Elimination System (NPDES) General Permit Requirements as well as implementation of mitigation measures that address potential flooding due to siltation during wet weather events (Measure 3.12-2). Most of the Project area lies within the limits of San Francisco; thus mandatory compliance with Article 4.1 of the San Francisco Public Works Code would address the potential for cumulative impacts on surface water quality (see Measure 3.12-3). Therefore, the Project's residual contribution to surface water quality impacts would not be cumulatively considerable *(less than significant).*

Proposed Project impacts related to the depletion of groundwater resources would be less than significant because groundwater dewatering would be local in extent and temporary in nature, would be limited to the shallow groundwater zone, and would not affect municipal and domestic wells in the Project area (see Impact 3.12-3). Although past, present, and future projects could also require construction dewatering, the effects on the shallow groundwater zone are primarily determined by rainfall and recharge conditions rather than by temporary construction dewatering. Therefore, the Project's contribution to this cumulative impact would not be cumulatively considerable *(less than significant).*

The proposed Project is not expected to result in alteration to drainage patterns; thus, this Project's contribution to this cumulative impact would be *less than significant.*

As discussed in Section 3.12, Hydrology and Water Quality, Project impacts associated with the use of recycled water for irrigation purposes would be less than significant with compliance with Title 22 guidelines. Although several other projects within the vicinity of the proposed Project would include application of recycled water (i.e., Jefferson High School, Westlake School, and SFPUC's Westside Recycled Water Project), these project sites are located 1 to 2 miles from the proposed Project area. These projects would also be subject to Title 22 guidelines. Therefore, cumulative impacts associated with the use of recycled water would be *less than significant.*

Mitigation Measures: None required.

Hazards and Hazardous Materials

Impact 5.12: Cumulative effects related to hazardous conditions and exposure to or release of hazardous materials.

The geographic scope of potential cumulative hazards impacts encompasses the Project area. These types of impacts are generally site specific and depend on past, present and future industrial uses and existing soil, sediment, and groundwater conditions.

With implementation of a site health and safety plan and preparation of a materials disposal plan (Measure 3.13-1), the proposed Project would have a less than significant hazardous materials impact to the public or the environment within the vicinity of the proposed Project area. In general, the potential impacts related to hazardous materials are site specific and not cumulatively additive. Other projects listed in Table 5.1, although likely increasing the potential to disturb existing contamination and the handling of hazardous materials, would be required to comply with the same regulatory framework as the Project. This includes handling and disposing of hazardous materials. Therefore, the effect of the Project on hazardous materials, in combination with other past, present and foreseeable future projects, would be *less than significant*.

Mitigation Measures: None required.

Energy Resources

Impact 5.13: Cumulative increases in the use of nonrenewable energy resources.

Construction activities associated with the proposed Project and the planned projects listed in Table 5.1 would require the use of fuels to operate construction equipment and transport employees and materials. Implementation of exhaust control measures (Mitigation Measure 3.14-1) would ensure that fuels are not used in a wasteful or inefficient manner. Therefore, the Project's contribution to the regional cumulative increase in construction-related energy consumption would not be cumulatively considerable (*less than significant)*.

As described in Section 3.14, Energy Resources, the proposed Project will result in an increase in pumping and would result in an incremental increase in energy consumption. The three new irrigation pumps that will be installed at Harding Park will require an increase in energy consumption as well. Although energy consumption is anticipated to increase, operational impacts to energy resources would not be considered wasteful with the incorporation of Mitigation Measure 3.14-2. Thus, the proposed Project's contribution to cumulative increases in long-term energy demand would not be cumulatively considerable (*less than significant)*.

Mitigation Measures: None required.

5.4 References

City of Daly City, Public Works Department, Vista Grande Drainage Basin Alternatives Analysis webpage, available online at: http://www.ci.daly-city.ca.us/city_services/depts/public_works/pwnet/vistagrande_alts.html, accessed on May 12, 2009.

San Francisco Planning Department, 2008. *Final Program Environmental Impact Report on the San Francisco Public Utilities Commission's Water System Improvement Program*. State Clearinghouse No. 2005092026. Certified October 30, 2008.

San Francisco State University, Campus Master Plan, available online at: http://www.sfsumasterplan.org/masterplan.html, accessed on May 13, 2009.

CHAPTER 6
Report Preparers

6.1 Project Sponsor

Lead Agency

City of Daly City

Department of Water and Wastewater Resources
153 Lake Merced Blvd.
Daly City, CA 94105

- Patrick Sweetland – Director
- Cynthia Royer – Manager of Technical Services

Responsible Agency

San Francisco Public Utilities Commission

1145 Market Street, 4th floor
San Francisco, CA 94103

- Paula Kehoe – Water Resources Manager
- Manisha Kothari – Project Manager
- Joan Ryan – Project Engineer

6.2 EIR Authors and Consultants

ESA

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San Francisco, CA 94104

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- Project Manager – Erin Higbee
- Deputy Project Manager – Kirstin Conti
- Land Use – Karmen Martin
- Aesthetics – Alisa Moore, Karmen Martin
- Cultural Resources – Heidi Koenig

- Transportation and Traffic – Karmen Martin
- Noise and Vibration – Donald Ambroziak, Jill Hamilton
- Air Quality – Donald Ambroziak
- Recreation – Kirstin Conti
- Public Services and Utilities – Kirstin Conti, Jill Hamilton
- Biological Resources – Natasha Dvorak
- Geology and Soils – Allison Chan
- Hydrology and Water Quality – Allison Chan
- Hazards and Hazardous Materials – Eric Schniewind
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- Tracy Clinton, P.E. – Project Manager
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Planning Department, City and County of San Francisco Major Environmental Analysis

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San Francisco, CA 94103

- Diana Sokolove, Senior Environmental Planner

APPENDIX A
Scoping Comment Letters

BAWSCA

Bay Area Water Supply & Conservation Agency

February 4, 2009

Patrick Sweetland
Director, Water and Wastewater Resources
City of Daly City
153 Lake Merced Blvd
Daly City, CA 94105

Subject: BAWSCA Comments Harding Park Recycled Water Project Notice of Preparation

Dear Mr. Sweetland:

The purpose of this letter is to provide comments to the City of Daly City from Bay Area Water Supply and Conservation Association (BAWSCA) regarding the January 2009 Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the Harding Park Recycled Water Project.

<u>1.1.2 SFPUC's Water System Improvement Program</u>

The EIR should clearly indicate the commitments to water conservation and recycling made by all agencies that rely on the San Francisco Regional Water System, not just San Francisco. On p. 2, the NOP correctly states that "As part of the WSIP, the SFPUC plans to meet or offset ten mgd of its retail demand in San Francisco through a combination of conservation, recycled water, and groundwater projects." In the EIR for this project, it should be noted that as part of the WSIP BAWSCA and its member agencies committed to the implementation of 58 million gallons per day (MGD) of conservation savings and reclamation by 2030.

This 58 MGD includes:

- 25 MGD conservation savings that would naturally result from implementation of the existing plumbing codes;
- 23 MGD of conservation and recycled water that BAWSCA member agencies have committed to as part of the planning process with SFPUC and which each individual agency is planning to implement;
- An additional 10 MGD of conservation savings within the BAWSCA area that was committed to by BAWSCA as part of its comments on the San Francisco Public Utilities Commission (SFPUC) Draft Program Environmental Impact Report (PEIR) for their Water System Improvement Program (WSIP).

2.0 Project Purpose and Objectives

The EIR should clearly identify that the Project provides a benefit to San Francisco retail service area only and does not provide a regional benefit to the wholesale customers who rely on the San Francisco Regional Water System. On p.2 of the NOP, the following two sentences are presented:

- The Project is part of the SFPUC's WSIP and would contribute to its goals of diversifying regional water supplies through the development of recycled water.
- Diversify the SFPUC's water supplies by developing recycled water to benefit the SFPUC regional water system and help meet long-term water demands within the regional water system.

It is critically important that these sentences and the associated discussion in the EIR are changed to clarify that the Project would allow the City of San Francisco to diversify water supplies for the San Francisco **retail** service area only and not the Regional Water System. The Project is being developed to benefit San Francisco's retail service area and is needed by San Francisco to meet its commitment to reduce retail customer use of surface water to 81 mgd by 2018, as required by the WSIP and adopted by the SFPUC on October 30, 2008.

The Project does not provide a benefit to the San Francisco Regional Water System or its wholesale customers. To the extent that the Project develops a non-potable water supply that can offset an otherwise potable water use, it provides a long-term water supply benefit only to the retail customers in San Francisco.

Thank you for this opportunity to comment on the Notice of Preparation for the Harding Park Recycled Water Project. If you have questions concerning these comments, please call me at (650) 349-3000.

Sincerely,

Nicole M. Sandkulla

Nicole M. Sandkulla, P. E.
Senior Water Resources Engineer

cc: A. Jensen, BAWSCA
R. McDevitt, Hanson Bridgett
M. Carlin, SFPUC

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
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OAKLAND, CA 94623-0660
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January 23, 2009

BAG0032
SCH#2009012004
SF-35-0.8
SF-1-R0.31

Mr. Patrick Sweetland
Daly City, Department of Water and Wastewater Resources
153 Lake Merced Boulevard
Daly City, CA 94015

COPY

Dear Mr. Sweetland:

Harding Park Recycled Water Project – Notice of Preparation (NOP)

Thank you for including the California Department of Transportation (Department) in the environmental review process for the Harding Park Recycled Water Project. The following comments are based on the NOP.

As lead agency, Daly City is responsible for all project mitigation, including any needed improvements to State highways. The project's fair share contribution, financing, scheduling, and implementation responsibilities as well as lead agency monitoring should be fully discussed for all proposed mitigation measures and the project's traffic mitigation fees should be specifically identified in the Environmental Impact Report.

Any required roadway improvements should be completed prior to issuance of project occupancy permits. An encroachment permit is required when the project involves work in the State's right of way (ROW). Therefore, we strongly recommend that the lead agency ensure resolution of the Department's concerns prior to submittal of the encroachment permit application; see the end of this letter for more information regarding the encroachment permit process.

Traffic Impact Study (TIS)
The Department is primarily concerned with impacts to the State Highway System and the proposed project may be adjacent to State facilities. Please ensure that the environmental analysis evaluates the traffic impacts on State facilities by applying the following criteria to determine if a TIS is warranted:

1. The project will generate over 100 peak hour trips assigned to a State highway facility.

2. The project will generate between 50 to 100 peak hour trips assigned to a State highway facility, and the affected highway facilities are experiencing noticeable delay; approaching unstable traffic flow (level of service (LOS) "C" or "D") conditions.

3. The project will generate between 1 to 49 peak hour trips assigned to a State highway facility, and the affected highway facilities are experiencing significant delay; unstable or forced traffic flow (LOS "E" or "F") conditions.

We recommend using the Department's *"Guide for the Preparation of Traffic Impact Studies"* for determining which scenarios and methodologies to use in the analysis. It is available at the following website address:
http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

Cultural Resources
If construction activities are proposed within the State's ROW, the Department requires documented results of a current archaeological record search from the Northwest Information Center (NIC) of the California Historical Resources Information System before an encroachment permit can be issued. Current record searches must be no more than five years old.

The Department requires the records search, and if warranted, a cultural resource study by a qualified, professional archaeologist, to ensure compliance with NEPA (if there is federal action on the project), CEQA, Section 5024.5 of the California Public Resources Code (for state-owned historic resources) and Volume 2 of the Department's Environmental Handbook (the "*Standard Environmental Reference*" (SER), available at http://www.dot.ca.gov/hq/env/index.htm).

Work subject to these requirements includes, but is not limited to: lane widening, channelization, auxiliary lanes, and/or modification of existing features such as slopes, drainage features, curbs, sidewalks and driveways within or adjacent to State ROW.

Permits
Transportation Permits - Project work that requires movement of oversized or excessive load vehicles on State roadways requires a transportation permit that is issued by the Department. To apply, a completed transportation permit application with the determined specific route(s) for the shipper to follow from origin to destination must be submitted to the address below.

Office of Transportation Permits
California DOT Headquarters
P.O. Box 942874
Sacramento, CA 94274-0001

See the following website link for more information:
http://www.dot.ca.gov/hq/traffops/permits/.

Encroachment Permits - Additionally, any work or traffic control within the State's ROW requires an encroachment permit that is issued by the Department. Traffic-related mitigation measures will be incorporated into the construction plans during the encroachment permit process. See the following website link for more information:
http://www.dot.ca.gov/hq/traffops/developserv/permits/

To apply for an encroachment permit, submit a completed encroachment permit application, environmental documentation, and five (5) sets of plans which clearly indicate State ROW to the address at the top of this letterhead, marked ATTN: Michael Condie, Mail Stop #5E.

Should you have any questions regarding this letter, please contact Lisa Courington of my staff via email at lisa.ann.courington@dot.ca.gov or by phone at (510) 286-5505.

Sincerely,

Lisa Carboni

LISA CARBONI
District Branch Chief
Local Development - Intergovernmental Review

c: State Clearinghouse

United States Department of the Interior
NATIONAL PARK SERVICE
Golden Gate National Recreation Area
Fort Mason, San Francisco, California 94123

IN REPLY REFER TO:

L76 (GOGA-PLAN)

JAN 28 2009

RECEIVED
JAN 29 2009

Mr. Patrick Sweetland
City of Daly City
Department of Water and Wastewater Resources
153 Lake Merced Blvd.
Daly City, CA 94015

Re: Scoping Comments for the Harding Park Recycled Water Project

Dear Mr Sweetland:

In response to the City of Daly City's Notice of Preparation to prepare an Environmental Impact Report (EIR), the Golden Gate National Recreation Area (GGNRA) submits the following scoping comments. The City of Daly City (the City) is working in partnership with the San Francisco Public Utilities Commission (SFPUC) which is a component of the SFPUC Water System Improvement Program (WSIP), to accomplish the project. NPS has an interest in this project because improvements are proposed for areas that lie adjacent to or in the vicinity of the GGNRA.

As is described in the Notice of Preparation, the purpose of this project is to obtain recycled water from the North San Mateo County Sanitation District Recycled Water Treatment Plant to irrigate Harding Park and Fleming Golf Courses. The project will utilize existing recycled water facilities that are currently serving the Olympic Club in San Francisco and will include construction of a 700,000 gallon underground recycled water storage tank at Harding Park Maintenance Yard, 4,800 feet of 18-inch diameter pipe along Lake Merced Boulevard, irrigation system supply pumps and controls at Harding Park Maintenance Yard and back-up connection to the SFPUC potable water distribution system.

We support expanded uses of recycled treated wastewater as a water conservation measure. We request that the Draft EIR address potential impacts to existing land uses, to visual character, to traffic circulation and safety during project construction, and identify whether projected road closures might affect access to GGNRA lands such as Fort Funston or Ocean Beach. We also recommend that the Draft EIR include an assessment of any potential cumulative effects of the proposed actions with those associated with the Vista Grande Project that is currently being planned to update the overwhelmed storm water infrastructure in northern Daly City.

Thank you for the opportunity to comment and we look forward to your continued coordination with the GGNRA on this project. Please call Liz Varnhagen (415) 561-2888 on my staff at with questions or for further coordination.

Sincerely,

Nancy Hornor
Chief of Planning

GIBSON, DUNN & CRUTCHER LLP

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February 5, 2008

Direct Dial
(415) 393-8370
Fax No.
(415) 374-8405

Client No.
79624-00117

Patrick Sweetland
Director, Department of Water and Wastewater Resources
Harding Park Recycled Water Project EIR
153 Lake Merced Boulevard
Daly City, California 94015

Re: *Harding Park Recycled Water Project EIR*

Dear Mr. Sweetland:

This firm represents Parkmerced Investors, LLC, owners of a 114-acre portion of the neighborhood known as Parkmerced, located in southwest San Francisco. On January 10th, 2008, Parkmerced Investors submitted an application for environmental review to the City of San Francisco for a comprehensive and innovative long-term development program for Parkmerced based on the principles of environmental sustainability and neighborhood livability (the "Parkmerced Project"). The Parkmerced Project would promote these principles by creating a pedestrian-friendly neighborhood that reduces automobile dependency and relies on environmental technologies to reduce energy and water usage. Over a period of 15 to 30 years, the Parkmerced Project would construct 5,656 net new residences, a neighborhood core containing new neighborhood-serving retail, and approximately 68 acres of open space uses (such as athletic fields, walking and biking paths and community gardens).

As part of this commitment to environmental sustainability, the Parkmerced Project would very much welcome the ability to utilize recycled water from the proposed Harding Park Recycled Water Project. Therefore, we are writing to respectfully request that the demand projections for the Harding Park Recycled Water Project include the Parkmerced Project and its potential use of recycled water from the Harding Park Recycled Water Project. After the completion of the Parkmerced Project, we anticipate that Parkmerced will use approximately 0.22 million gallons per day of recycled water per peak month for irrigation and approximately

0.26 million gallons per day of recycled water on average for residential toilet flushing and laundry.

Please contact me at (415) 393-8370 if you have any questions.

Sincerely,

Jim M. Abrams

JMA/jma